AMERICAN

FORESTS

December 1948

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AMERICAN FORESTS

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Christmas in Paradise Valley, Mt. Rainier
Photograph by Orville Borgersen

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Howard Brown

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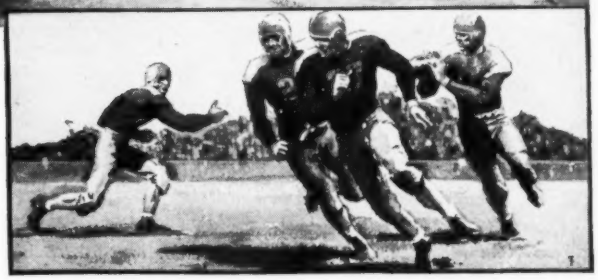
The American Forestry Association is a national organization—educational in character—for the advancement of the intelligent management and use of the country's forests and related resources of soil, water, wildlife and outdoor recreation. Its purpose is (1) to bring about adequate protection and perpetuation of these resources by creating an enlightened public appreciation of the need of conserving them through wise use for the present and future welfare and enjoyment of all the people; (2) to make available to Americans in all walks of life a wider knowledge and appreciation of their forest resources and the part they can play in the social and industrial life of our nation.

The History MORE THAN half a century ago American men and women of vision, stirred by the rapid destruction of forests and forest life in the United States, began to raise their voices in behalf of conservation. Foreseeing the danger of allowing America's rich forests and vast natural wealth to be thoughtlessly wasted, these public-spirited individuals protested the needless destruction that was taking place. Out of their efforts came a collective force — The American Forestry Association, first organized in 1875 and made a national influence in 1882.

The Record THUS The American Forestry Association has a long record of efficient public service. The establishment of the United States Forest Service and the creation of the nation-wide system of state and national forests and parks were due in no small part to the Association's efforts. Its educational work, extending over more than seventy years, has stimulated public action and built public support for protection against forest fires and floods; for prevention and control of soil erosion; for the development of conservation policies in forest management for continuous production through wise use; for the control of forest insects and diseases and the preservation of fish and wildlife.

The Support FROM AN ORGANIZATION of a few hundred members three decades ago, the Association has attained a substantial membership of many thousand men and women, living in every state in the Union and in foreign countries throughout the world. The funds of the Association are administered by a Board of Directors composed of individuals of national standing—men and women who give their services free, who have a practical understanding of the nation's present-day conservation needs, and are equipped through experience, ability, enthusiasm and training to advance the Association's program.

The Program BECAUSE OF its independent non-political character, the work of The American Forestry Association is vitally necessary in the field of public service. It provides an unprejudiced influence for the development of sound conservation measures. It helps coordinate public, state and federal policies. It cooperates closely with federal, state and private agencies in conservation work. At the same time it initiates, sponsors and carries on needed projects in conservation in addition to its regular broad continuous program of education.



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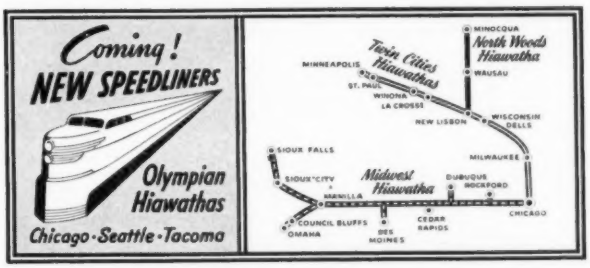
Our sights for serving you in the years ahead are set even higher. F. N. Hicks, Passenger Traffic Manager, Union Station, Chicago 6, Ill.



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MY FAVORITE TREE

By

KATHARINE CORNELL

TO WRITE even a brief statement in support of a favorite tree is a rather large order for one who is not scientifically inclined. Of course, I have a favorite — the oak — but to qualify my selection, to put down in words the reasons why among all of our beautiful trees the oak ranks first with me, is difficult. Nor is my position helped much by my choice of oaks, for it is not the great old trees with widespreading branches and noble crowns that appeal to me so much as the twisted scrub oaks that grow near the sea. Many of these, along with beach plum, grow at my place on Martha's Vineyard.

Perhaps this is why the scrub oak is a favorite with me — this and its association with the sea.

Editorial

Merry Christmas

AMONG the delightful myths and legends of Christmas that have survived through the centuries, is one related by Alfred Carl Hottes in his fascinating book *1001 Christmas Facts and Fancies*, published by the A. T. De La Mare Company, New York:

"The edict of the evil King Herod found Joseph, Mary and the Christ Child fleeing from the soldiers. Too weary to proceed, they came to a forest. A huge pine tree, aged and hollow, bade them rest inside its cool trunk. It lowered its arching branches and concealed the Holy Family until the soldiers of Herod had passed. When morning came the Christ Child raised His arms and blessed the aged pine."

Here, in the simple lines of an old legend, is the spirit of much of our effort in forest conservation — to achieve among all people understanding and appreciation of the importance of trees to their happiness and security. The example set by the Christ Child in bestowing His blessings in recognition of this service is one each of us can and should resolve to follow.

With this thought, we extend Christmas Greetings to those whose lives are dedicated to the furtherance of conservation concepts—and to the people of America whose understanding and support are necessary if these concepts are to be realized.

The Return of the Trumpeter

MOST Americans are familiar with the story of the dodo, the passenger pigeon, the heath hen and other once cherished and valuable species of native wildlife that have passed down the long road to oblivion. The men who know the facts, mindful no doubt that history has a way of repeating itself unless we repent and sin no more, have explained in great detail, over and over, why and how they vanished. It is not a flattering tale that they relate. It pays small tribute to our appreciation of a rare heritage or to our ability to remedy a grievous mistake when at last we are face to face with it.

Thus it comes as a distinct relief to read that the magnificent trumpeter swan is reversing the one-way trip of the dodo. Thought to be extinct early in the century, and with only 73 birds in existence slightly more than a decade back, this rarest of our waterfowl now numbers 361—a gain of 60 birds during the past year. Considering its former abundance, this may seem little to cheer about. But the significant thing is that in the judgment of wildlife managers restoration processes are proving successful enough to encourage the belief that the huge white trumpeter will in time, barring some unforeseen catastrophe, return to a place of prominence in American wildlife.

The trumpeter's decline was rapid. It began with heavy trading in his down and breast skin and reached a dangerous low when his breeding grounds were claimed for farms and ranches. The same old story. Extermination of the species seemed complete when, in 1907, a small flock was discovered in the region around Yellowstone National Park and Montana's Red Rock Lakes. Immediately the federal government, supported by conservationists, launched upon a program of restoration. The situation today is that a national wildlife refuge exists at Red Rock Lakes mainly for the protection and perpetuation of the big white swans. They enjoy complete protection, both in this country and in Canada; none may be taken for any purpose. And because hunters frequently confuse the trumpeter with the snow goose, a closed season on the latter has been put into effect in Wyoming, Idaho and three counties in Montana.

Under such all-out protection, the trumpeter has made a slow but encouraging start on the road back. As revealed by the annual census of the Fish and Wildlife Service and the National Park Service, populations jumped from 73 in 1935 to 148 in 1938 and 211 in 1941. The last census brought this figure up to 361 birds—170 on the Red Rock Lakes refuge, 57 in Yellowstone and the remainder scattered over adjacent territory and on the National Elk Refuge in Wyoming and the Malheur National Refuge in Oregon.

An economist undoubtedly could make some very interesting revelations on what it has cost the American people to pull the trumpeter back from the doorstep of oblivion. And the most insignificant item in his accounting would be the six bushels of wheat and barley required to sustain each of the birds through the rigors of winter. Yet the cost would be trifling compared to the national asset of restoring the big white birds to their old flyways.

If a moral could speed up the return of the trumpeter, or bring back the dodo, the passenger pigeon, or the heath hen, a very healthy one could be pointed up here. The time is past for that, however. Where the trumpeter is concerned, all the American people can do now is to pay the bill and place their faith in the wisdom and skill of their wildlife managers. But while they are about this, they might ponder anew the simple old law of cause and effect. Reckless and excessive exploitation of any resource leads inevitably, and often quickly, to depletion.

So while we rejoice in the trumpeter's comeback, let us resolve to consign its place in oblivion to those greedy and reckless practices in resource use from which spring our most perplexing and costly conservation problems.

"Snow Pattern"—Photograph by Vernon D. Cady

Asahel Curtis

While Washington Territory grew up around it, the land dominated by Mt. Olympus lay wrapped in mystery

THE LAND THAT SLEPT LATE

By PRESTON MACY and WILL MULLER

ONE DAY in 1889, when Seattle, Washington Territory, was a lusty young sawmill town of 43,000 inhabitants and the outfitting point for Alaska prospectors, Edmond Meany, a 27-year-old city editor, whose mind was filled with history and exploration, sent a reporter to interview Governor Ferry. The governor sketched a word picture of a land which still lay sleeping only 100 miles north and west from Seattle.

The Olympic country, he told the journalist, included roughly 2,500 square miles—a land as mysterious and unknown as the interior of Africa! The reporter hurried back to his desk and wrote the story. It appeared in the October 23, 1889, issue of the Seattle *Press* and was copied later by papers across the nation.

"White men . . . have only vague accounts of . . . this country," he wrote, "for investigation of all the claims of travelers has invariably proved they have only traversed its outer edges. The Indians have never penetrated it, for their traditions say that it is inhabited by a fierce tribe which none of the Coast tribes dared to molest. There is a fine opportunity . . . to acquire fame by unveiling the mystery which wraps the land encircled by the snow-capped Olympic range. . . ."

The story brought a flood of inquiries. Men wanted to organize the exploration. They wanted to join it. Young Meany, who later became the outstanding historian of the Pacific Northwest and the grand old man of the University of Washington campus, convinced the editors that the *Press* should finance the exploration.

James H. Christie, 35, a former Arctic explorer, Indian fighter, prospector-hunter, was chosen to lead the *Press* exploration expedition. The four other members selected included Charles A. Barnes, 30, a former officer of a federal revenue cutter; John H. Crumback, 33, cowboy, hunter-prospector and Indian fighter; John W. Sims, 28, an Englishman, ex-soldier, hunter - trapper - prospector; and Christopher Hayes, 22, a cowboy from east of the Cascade Mountains.

On December 7, 1889—less than two months after the territorial government gave way to statehood—the *Press* expedition left Seattle by steamer and headed up the Strait of Juan de Fuca toward the Olympic Peninsula and into what is today Olympic National Park country.

Just 101 years earlier, the curtain was rising on the history of this unknown land. On July 4, 1788, Captain John Meares, one of the most colorful sea rovers and adventurers

The stirring story of the Seattle *Press* expedition which, perhaps unwisely, chose the winter of 1898 to explore the jumbled mountains which now form Olympic National Park

of his century, sailed his ship southward off the upper Washington coast and sighted a beautiful mountain with three snowy peaks. Impressed with its grandeur, he recorded a word picture of it in the ship's log, and named it Mt. Olympus. Little did Meares realize that the same mountain had been admired 14 years earlier by Captain Juan Perez's men, sailing under the Spanish flag, and was to be seen during the next four years by three other sea exploring expeditions.

The Olympic country lay relatively undisturbed by white men for the next 100 years. Although the area was carefully eyed by Russia, it was finally claimed by Spain, Great Britain and the United States. Then while the vast Olympic country slept, Washington Territory grew up around it. Now, in the depths of a severe mountain winter, a former Arctic explorer and four companions were on their way to open this unknown country.

When the explorers landed at Port Angeles (now Olympic National Park headquarters), the waterfront town's board walks resounded with the rhythmic thump of loggers' caulked boots. The explorers talked with men who had come to Port Angeles as its first settlers in the fifties and sixties to farm and work in the woods and sawmills and to outfit tall-masted sailing ships which anchored in the sheltered harbor. From these early settlers they learned nothing about what lay behind the first ranges.

The explorers then decided to pack their gear to a point on the Elwha River, about four miles above its mouth. There they would build a flatboat and pole upstream as far as possible. From that point they would cut their own trail across the unknown wilderness. They hired a buckboard to haul their 2,000 pounds of gear and lumber for the flatboat to an unoccupied farmhouse five miles west of town, and purchased a pair of mules to pack into the mountains.

Back of the farmhouse an abandoned trail wound westward toward the Elwha. The five men spent a week swinging their axes, swamping out the old trail and extending it to the river. Barnes, who kept a diary of the trip, recorded humorously the first day's travel:

"Thursday, December 19, the packing began. The mules, Jennie and Dollie . . . submitted to be cinched up to the tune of 250 pounds each. Each man seized his 60 pounds, the dogs bounded ahead and moving camp to the river had begun.

"In half a mile was reached a swamp, upon which had been bestowed a world of pains in trying to make it passable for the mules. . . . But a dozen steps demonstrated the futility of the hope, and soon the wretched mules were floundering about in the bottomless morass. Packs were unloaded and after much tugging, pulling and prying the mules were pulled out and reloaded.

"Another trial with a lighter load produced similar results. . . . Jennie in mud to the tail, beans, pork, snowshoes, frying pans, tobacco, and other bric-a-brac scattered about in profusion, joined her voice to Dollie's, who, in her attempt to jump a log, got only half way and hung there between wind and water, filling the air with lamentations.

"Christie and Barnes, their custodians, hatless and coatless, mud to their thighs, were struggling about, tugging at bridles, slacking cinches and calling for assistance temporal, and, it has since been affirmed about camp, spiritual. . . ."

By Christmas night the expedition had finished packing to Canyon Camp, 100 feet above the river, where the ground was blanketed with several feet of snow. There they spent three weeks building a flatboat, thawing the frozen, watersoaked boards over a campfire so they could bend them to fit the frame. The job was completed by January 13, 1890, and "Gertie," as the 30-foot flatboat was named, was equipped with a 300-foot towline, spruce poles and an 18-foot steering oar. They loaded the ton of gear into the craft and started southward across the Peninsula.

"Mr. Christie took the bow pole, assigned me to the steering oar and the other boys to the towline on shore. . . ." Barnes recorded the first day. "The fall of the river is great and the current swift, with rocks churning the water to foam. . . . Near the end of the day's trip the boat was swung on a rock by the force of the current, and Mr. Christie and I had to jump overboard to save her. . . .

"January 14. We have made today not more than a quarter of a mile . . . every foot was worked for. . . . We had a short but swift and difficult fall of rapids to drag through. We made three attempts to get over by towing but the snow furnished such poor footholds that it was impossible. . . . Finally the doctor was sent ahead to take a turn about

Summer view of Mt. Olympus. When Explorer Barnes gazed upon the three peaks, the mountain was snow bound from base to summit

Asahel Curtis

a tree with the line while the rest of us plunged to our belts into the water filled with floating ice and snow, and gradually, foot by foot, we dragged her over. It was terribly cold. . . . As we managed to get out of the freezing water the air changed our garments to ice in a moment. . . ."

Day after day the little expedition fought its way up the swift, icy river, pulling "Gertie" laden with her ton of gear, wading waist deep in the icy water, falling into snow-covered holes. On the evening of January 23, the expedition arrived at McDonald's clearing, "which is the outpost of civilization as well as the head of practicable navigation." They had traveled approximately five miles up the river.

From January 24 to February 4 the expedition was forced to stay at McDonald's cabin and wait for better weather. When the sky cleared, five feet of fresh snow covered the ground. It would be impossible for the mules to pack across the deep, soft surface.

Recorded Barnes, "There was nothing for it but to pack. . . . We rigged up the pack straps, each man shouldering 50 pounds, and the actual start was made. Even the snowshoes sank six to eight inches into the snow. By nightfall we had packed 800 pounds a mile and a half into the canyon, this over a trail that was not only rough but deep. The expedition returned that night to the ranch, quite tired from the first day's packing. It was the first of many days of similar labor."

While traveling over a steep backbone of a ridge where they had cut a trail into the face of a precipice, "a mere narrow ledge or shelf over a chasm 400 feet in depth," Jennie, the mule, lost her footing. She plunged over the cliff and landed on a ledge 100 feet below. Christie and Sims went down on a rope to the dead animal, and retrieved the flour from her pack.

On February 28, Barnes wrote, "Today was a field day for game. While we sat at breakfast about the fire, we caught sight of two large gray wolves on the opposite side of the river." They shot and killed one wolf. "While the skinning was going on, Sims caught sight of a good-size wildcat. . . . It was a beautiful sight for a moment to see it stand, as it did, surprised, wondering what kind of animals we were." During the previous weeks they had sighted bands of as many as 100 elk wintering along the river bottom.

Records of the expedition describe the slow progress southward. They would carry 60-pound packs three or four miles up the river and return to camp for another load until the entire outfit was moved up. Frequently snow flurries forced them to stay in camp days at a time. As the explorers moved southward, they carved a crude trail into the wilderness, always marking it. According to Barnes:

"The trail is blazed with the trade mark of the expedition. It consists of three blazes, one above the other. . . . Where time was an object, single blazes were occasionally made." Park rangers and others hiking into the back country today occasionally come across one of the old triple blazes.

This sketch of the members of the expedition appeared in the Seattle *Press*. Left to right, Sims, Runnalls, Barnes, Christie, Crumback and Hayes

By March 14, the explorers had come to a beautiful little green valley which they named "Geyser Valley."

"We spent nearly two weeks in the valley," wrote Barnes. "All hands needed rest and an opportunity to repair clothes as well as physical fiber. We need time to explore the surrounding country and to discover the best route or pass through the mountains to the southward.

"The little valley nestling in the mountains, an oasis in the desert of snow, won the affection of us all. . . . Peaceful and happy, covered with mammoth trees, through whose interlaced boughs gleamed the golden sunshine . . . it seemed a little paradise. The enclosing mountains rising steeply on every side were alive with game animals, tame in the happy ignorance of the gun. The river, here broad and rippling, teemed with salmon, and its deeper pools were filled with trout. . . . We are now living like princes and kings.

"Now we had plenty of game of all kinds. Elk, deer, quail, grouse, chicken and salmon trout in plenty. . . . There was really no sport in shooting; the deer stood and gazed at the unaccustomed sight of man, until one could hit him with a stone. It was no unusual thing to see a band comprising 30 or 40 deer grazing on the hillsides within sight of camp. . . . Owing probably to the severity of winter, few bears were out of their hibernation as yet. We had seen none although we frequently came across traces of them in this valley."

On March 24, Christie, Barnes and Hayes scouted ahead to locate trail for the next leg of the journey. They sighted large areas of burned-over land on which young trees had grown into heavy thickets.

"On this day," wrote Barnes, "we made our first discovery of the former presence of man. It was a tree double-blazed after the Indian fashion. . . . It was the first evidence of the old Indian tribes. . . . The tree, a spruce . . . bore two trail blazes made when the tree was a sapling. The surrounding wood and bark of subsequent growth had grown to such degree as to almost meet across the blaze-faces." The explorers concluded from the growth rings that the tree was more than 300 years old and that the blaze was 200 years old.

"Half a mile beyond the blazed tree we came upon further and still more interesting evidence of ancient Indian life. Upon a little knoll a few feet to our left . . . overhung by firs

of enormous growth and wide-spreading foliage stood a post about six feet in height and twelve inches in diameter at the base. The base was about two feet high and covered with the decayed remains of what was once bark. The upper part of the post had been hewed down to a diameter of seven inches. This was at once identified as an Indian wringing post for dressing skins.

"The post bore signs of great antiquity. Although standing in a dry and sheltered place it was extremely rotten—so rotten that . . . a hunting knife could be driven into it to the hilt."

The *Press* party had talked with Indians living near the mouth of the Elwha and learned that those Indians had never traveled more than a few miles up the river. They knew nothing of the interior of the Olympics. Their fathers had restricted their hunting to the same foothills near the Strait and handed down no traditions which would indicate more extended travel by their immediate ancestors or more knowledge of the back country.

Later the same day the three men came upon what they decided was an ancient Indian trail. They saw old blazes at frequent intervals. They cut into one of these blazed trees. "We found by actual count 210 rings covering the edge of the blaze, indicating a probable age of over 200 years for the blaze. The blaze had grown with the tree, and was now about 10 feet long. A few hundred yards further on we came upon another wringing post similar to the one already described."

On a trail-locating trip a few miles south of the river which they named the Lillian, Christie, Barnes and Hayes looked down one day from a ridge upon a large, flat valley. This valley, they decided, was the key to the mountains and would make an excellent base for supplies and center for exploration. The only drawback was that this valley seemed to sweep far to the south and form a pass in that direction. The explorers were determined to travel southwestward and come out near the Lake Quinault settlement.

On the scouting trip, the three men learned with dismay that game suddenly became very scarce only a few miles south of the Lillian. The shrinking size of their grub supply was becoming a matter of great concern to them.

One day while the explorers were traveling through the broad, lush Press Valley (named for the paper which sponsored the trip), Dollie, the mule, suddenly gave out and lay down. They could not persuade her to rise, so they unloaded the animal and turned her loose. The next day when they returned for the remainder of their stores, Dollie still stood where they had left her.

Asahel Curtis

Modern explorers in the Olympic country — a party of The American Forestry Association's Trail Riders of the Wilderness

To this point, in more than four months' time, the expedition had traveled southward approximately 23 miles from their starting point on December 19, 1889. Their records indicate, understandably, that they thought they had traveled much farther. They left the Elwha now for the first time and headed up one of its large branches on the west side. They named it the "Goldie" for a gentleman in Seattle. For nearly a week they struggled up the canyon of the Goldie. Beautiful scenery opened before them at every turn. In many places the river was bridged with snow so that they could cross with ease to the side which offered better travel. The Goldie canyon became rougher and steeper. Provisions had dwindled to a two weeks' supply.

Halfway up the ridge above the Goldie, the party established a camp in the snow. The next day Christie and Barnes scouted ahead. Traveling on snowshoes, they arrived at the top of the ridge to find it connected by a saddleback with a sharp snow-clad peak directly southward. They reached the summit of the peak several hours later and gazed upon a sweeping panorama of grandeur. They saw a group of giant, snowy pinnacles, forming in their midst a great amphitheater in the clouds.

"The whole mountain system south of us came for the first time under our view," Barnes recorded, "and for the first time under the view of any white man. Before us what a jumble of mountains! Range after range of peaks, snow-clad from base to summit, extended as far as the eye could reach, in splendid confusion.

"For a moment only we gazed—then in one breath we cried, 'The Quinault!'"

The two men quickly photographed the panorama, sketched the relative bearings of the peaks after naming some of them, recorded their altitudes, sketched the course of the val-

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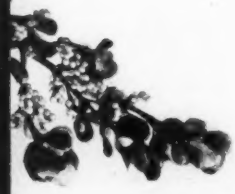
Mystery of the Mistletoe



By HARRY W. and DENDRIC J. DENGLER

OLD MYTHS, like fine wooden furniture, mellow and increase in value and interest with age. Frequently, the accounts associated with the origin of these stories are lost in the rapid passage of time. This sometimes enhances the mysticism and enchantment surrounding such legends.

Numerous widespread versions of the magical properties of the mistletoe persist to this day. The origin of the custom at Christmas of kissing under this parasitic plant may never be truly known. And so, while maids make merry at Michaelmas, students of folklore ponder this mystery of the mistletoe.

State flower of Oklahoma, even the exact meaning of the word "mistletoe" is not fully agreed on. Some authorities believe it derived from the old Anglo-Saxon *mist*, meaning glue or birdlime, and *tan*, a twig. The glue refers to the sticky nature of the berries while birdlime was formerly made from the berries and bark of this shrub. Others believe that the word was *mistl-tan*, meaning different twig, since it differed from the branch on which the mistletoe grew. Still others feel that the *tan* of the old Anglo-Saxon term *mistletan* means a prong, tine, or a shoot of a tree. *Mistel*, from the German, is of doubtful etymology, but probably means the same as the Latin *viscus* or *viscum*. This, of course, must refer to the mucilaginous character of the mistletoe berries. Some authorities believe that the European missel thrush, a bird very fond of the berries, is responsible for the naming of this plant. This bird, in old legends, was considered a messenger of the gods and introduced mistletoe to the earth by carrying the seeds on its feet. The "toe," added to the missel, might refer to reports that such berries are actually carried about on the feet of birds.

In primal days trees were classified as to their usefulness to mankind. The work of the early monks and medicine men was to discover the correct cures for all the illnesses of our ancestors. These early herbalists believed that for every illness there existed a tree or plant which would remedy such sickness. They further believed that those plants which appeared to simulate the appearance of the various human organs were most efficacious in correcting any ailment to that organ. Quite properly then, the mistletoe, because it grew downward from high trees, was considered a cure for "falling sickness" or epilepsy.

Because of its mythological origin, the mistletoe was accorded almost miraculous powers in healing various ailments. Decoctions of mistletoe were long considered a cure for the bites of mad dogs and wild animals, strained muscles, and for the relief of toothache, sores and the itch. The Druids so highly valued the mistletoe that they called it "heal all," believing it a panacea for all diseases.

In the middle ages in France amulets of mistletoe were commonly worn to ward off all illnesses. Rings of mistletoe were worn in Sweden to protect the wearer from all ailments while the Celts considered it an excellent relief for convulsions. A concoction of the berries steeped in oil was long considered excellent for curing colds and as an elixir for the health by the Brittany peasants. Mistletoe effectively cured ulcers; the sufferer merely needed to chew a piece of the leaf and to place another upon the sore.

Mistletoe was long thought to be effective in warding off fires, lightning, and harm in general. The Swedish farmers hung branches in

Despite a maze of legend and folklore, the riddle of this miracle plant of mythology remains unsolved

their houses for this purpose while the Swiss burned it in their houses as a protection against lightning. In other areas it also was considered effective in extinguishing fires.

It is of unusual interest to note that both the early peasants of England and the Ainus of Japan believed that barren women were helped to conceive by eating mistletoe. In certain sections of England it was formerly a widespread practice to feed a plant of mistletoe to the first cow that gave birth to a calf after the beginning of the new year. This was supposed to increase the fruitfulness of the herd and protect the health of the cows throughout the current year. Elsewhere in England, mistletoe gave strength to the wrestler and insured success to the hunter.

The Walos of Africa carried the leaves on their bodies in wartime, believing that it protected them from receiving wounds during battle. Elsewhere, this interesting shrub was thought an excellent protection against all manner of witchcraft. In Germany a branch hung over the doorway at Christmas will bring good fortune and many blessings to everyone in the house. Here, too, mistletoe carried into a house haunted by ghosts, forces these sinister evil spirits to come from hiding and to answer truthfully any and all questions the peasants may care to put to them.

It was an old custom in Sweden to carry knives with handles fashioned from mistletoe. This warded off possible attacks by witches but in order to be efficacious, however, the mistletoe had to grow on an oak and must be knocked down with stones.

The Swiss shot the mistletoe from the oak with bow and arrow. Here the sun had to be just right, the moon on the wane, and the twigs caught in the left hand. Such mistletoe was considered a remedy for every ailment of children.

In Austria a twig of mistletoe was laid on the threshold as a preventive of nightmare, while in France the shrub was an excellent antidote for all poisons. The latter was accomplished by either drinking a fomentation of mistletoe or by putting the plant on the sufferers stomach. Even as late as the middle of the eighteenth century high medical authorities recommended mistletoe as a remedy for epilepsy. This plant, grown on oak, was good for the fits and few things in its day were as good as mistletoe for "wind ruptures" in children.

The Ainus of Japan used the leaves of mistletoe for nearly all ailments. Many of them believed that it caused their garden to prosper and be more fruitful. They cut the leaves up very fine, muttered prayers over the bits, and sowed these with their seeds. While the English esteemed only the mistletoe found growing on the oak, the Ainus venerated only that growing on willow, their sacred tree.

While there are many old and interesting legends relating to the tree which formed the cross on which Christ was crucified, an old English tradition has it that the mistletoe was formerly a forest-size tree and furnished the wood for this purpose. Here folklore has it that because of this shameful use the "tree" was forever cursed and doomed to live in perpetuity as an insignificant shrub.

While no church ever approved of the use of mistletoe as a yuletide greenery, the old monk herbalists called it "wood of the cross." And, despite its early pagan associations, these monks ate bits of its wood and wore mistletoe amulets to ward off all diseases. It is significant to record that every remnant of mistletoe—leaf, twig or berry—must be cleaned up before Candlemas Day (February 2). If this should not be done there surely will be a death that same year in the family occupying the pew in which the debris was left.

The custom of decorating our homes at Christmas with mistletoe goes back for centuries, originating probably with the Druids. To these ancient folks, the oak was supposed to represent their idea of the Supreme Being; the mistletoe, growing on these giant trees, signified the dependence of man upon Him.

On the sixth day of the moon, at the end of the year, the Druids made most solemn preparation for their mystic rites in the gathering of the mistletoe. Led by an imposing priest two milk white bulls were driven to the base of the trees on which the mistletoe had been discovered. The priest, clothed in white, silently climbed the tree and, with a golden sickle, carefully dissevered this precious plant. Since all of its miraculous powers would be lost if the plant touched the ground it was carefully caught in a pure white mantle. The bulls were then slain as sacrifices and prayers offered that God would extend his benevolence to all the participants in the ceremony. The priests then distributed pieces of the mistletoe. These were made into rings, bracelets, and amulets and worn by the Druids to ward off all evil influences.

It was a custom, likewise, of the Druids to bring green plants indoors during the cold and snow of the winter. They believed that such plants as mistletoe afforded "a cheerful refuge for the woodland spirits and a place where these deities might have shelter from the severities of the weather. This practice has been considered by many historians as one of the origins of the present day custom of decorating our homes with greenery at Christmas time.

Our present day vogue of kissing under the mistletoe is thought to have stemmed from the early mythology of the Norsemen. Legend has it that Frigga, goddess of love and beauty, was sorely distressed by the unpleasant dreams of Balder, her beloved and beautiful son. To protect him from possible harm, she exacted promises from all living and inanimate things not to ill-treat him in any fashion. She disregarded the mistletoe, unfortunately, since it seemed such an insignificant plant and so incapable of maliciousness.

Now, since nothing could possibly harm the charmed Balder, it became great sport for his friends to hurl missiles and to shoot their arrows at him. Loki, an evil god, already jealous of the comeliness of Balder, became increasingly so at this added attraction. To solve the mystery of Balder's invulnerability, Loki, disguised as a woman, inquired of Frigga as to the reason why her son was never harmed by his friends' darts and clubs. Frigga replied that this was because of the pledges she had obtained. Loki persisted and asked further if there was nothing that could harm Balder. Frigga answered that there was nothing except the

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WHERE LITTLE WATERS WRITE BIG STORIES

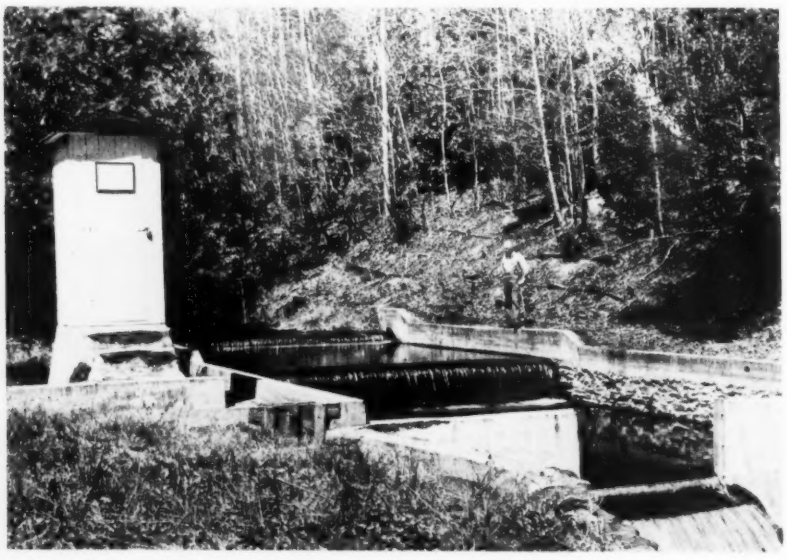
By CHARLES R. HURSH

Many, no doubt, can remember the heated discussion on forest-streamflow relations at the time the Weeks Law was passed in 1911 establishing national forests in the East. The heat of the discussion was in direct proportion to our lack of understanding of the subject and of one another. The subject is still clouded by opinion and prejudice. For example, some believe that water resources are associated with rainfall and climate and because there isn't much we can do about these, there, likewise, isn't much we can do about water. Others believe that although we are not able to alter greatly the amount of local rainfall, there is much we can do toward increasing the usefulness of the rain that does fall.

One question often asked is whether the cutting of trees will impair or jeopardize the quality or the yield of water in the streams. Another is whether harvesting timber products will increase runoff and produce floods. The answers to these questions—and many others—are not to be found in today's text books.

To learn the answers, the Southeastern Forest Experiment Station of the U. S. Forest Service is developing a gigantic outdoor laboratory of 4,000 acres in the mountains of western North Carolina. Here, carefully planned watershed experiments of interest to foresters, engineers and land use planners are being conducted. Already some of the perplexing problems of forest streamflow relations have been solved and the laboratory is just beginning to reach production.

The stream writes its own diary for every minute of the day by means of a water-level recorder connected with a float in the ponding basin



Known as the Coweeta Experimental Forest, the laboratory is located in the Nantahala National Forest, near Franklin. It is typical of the high rainfall area of the southern Appalachian Mountains. Because of favorable geology, soils, rainfall and stream drainage patterns, it is possible to obtain significant watershed results in a shorter time than in any other section of the country. Watershed conditions make possible the testing of various types of land management for timber, game and recreational resources.

As to geology, the forest lies entirely within a deeply weathered archean granite formation designated as Carolina gneiss. Distinct stratification such as characterizes sedimentary rocks is entirely lacking, an insurance that streamflow from small drainages is not influenced by precipitation falling outside their watershed boundaries. Then too, deeply weathered archean rock gives rise to soils that are relatively deep and well drained, allowing maximum opportunity for storage of soil moisture and ground water. The topographic pattern of the Coweeta Forest has given rise to numerous small inde-

From the air, the 4,000-acre Coweeta Forest is seen as one large drainage area made up of smaller ones. Twenty-eight of these units, outlined in white, are now being used for watershed management study

pendent watersheds. Elevations on the forest range from 2,000 to 5,200 feet above sea level.

Precipitation occurs almost entirely as rainfall, 70 to 80 inches annually, well distributed throughout the year. About 50 independent storms suitable for separate storm runoff studies occur each year.

Almost all the forest supports a hardwood stand that characterizes the southern Appalachian Mountain region. Only a few hundred acres have ever been cleared, and these were abandoned for farming about 1900 and are now restocked with second-growth trees. Between 1912 and 1920, the forest was logged for commercial timber but no important cutting has been done since with exception of removal of a few chestnut poles. Forest fires have not occurred since the turn of the century. Because the forest is publicly owned, permanency to experimental work is insured.

The study of water resource management is difficult. Streamflow is a complex process and the only way to discover how different physical forces act to produce streamflow is to understand each one separately and to fit the whole picture together somewhat like a jig saw puzzle. In the first place, it is difficult to find an experimental area suitable for measuring forest streamflow relations.

Then it is necessary to provide the facilities for the streams to write the day by day, yes, even minute by minute, story of their lives. Costs of the "writing materials" are high and their installation difficult and labor-consuming. The data recorded by the stream gaging stations, rainfall intensity gages, observation wells for underground flow measurements, and meteorological stations for temperature, humidity, evaporation and wind velocity measurements must be interpreted by skilled technicians. True, the streams and the influences which affect them write their own story, if provided with the writing materials of science, but the stories must be translated by experts in "stream language" into answers needed by water users.

On the Coweeta Forest, 28 small independent drainages ranging from 20 to 200 acres have been designated for watershed studies. Each watershed is subjected to a period of standardization before any changes are made. This period, ordinarily from five to ten years, makes it possible to establish the hydrologic characteristics of a watershed before any treatment is made. Then after changes in forest cover conditions, it is possible during a second period of measurement to determine how much these established hydrologic characteristics have been altered. It is also possible to use one untreated drainage area as a control for another that has been changed. Both procedures are used in measuring the effects of vegetative cover changes.

Because of the large number of questions to be answered and the limited number of watersheds available, priority was given only to the most important. Studies of the effect of complete removal of forest trees on streamflow, of clearing and cultivat-

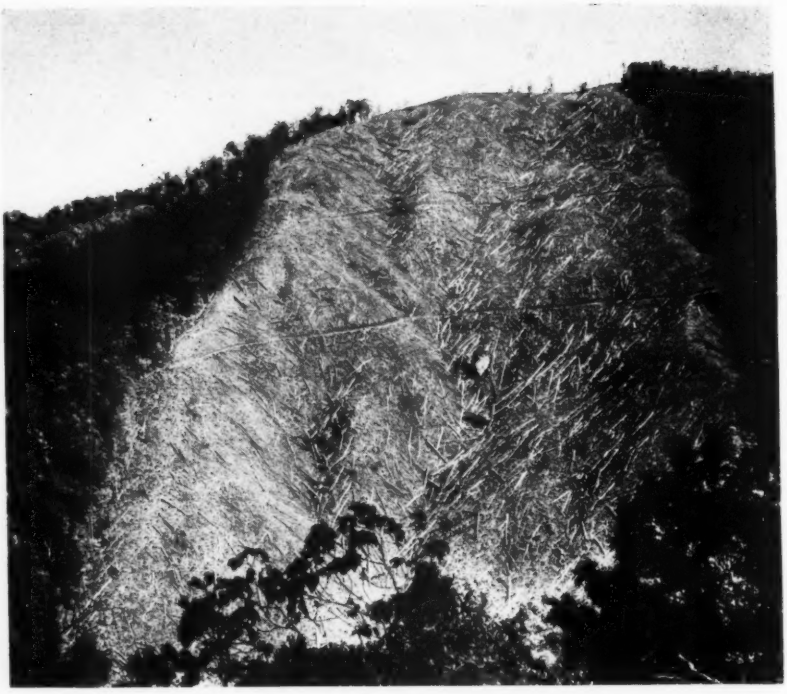
Equipped with the instruments of science, the watersheds of a North Carolina forest are providing solutions to water problems

ing steep forest lands, of woodland grazing, of logging and burning have been undertaken first.

One test was made to determine how much the water ordinarily transpired by trees would appear as runoff in the streams if the trees were not present. On two watersheds all tree and shrub vegetation was completely cut back to the ground with as little disturbance to the forest floor as possible. No logs or other wood products were removed from the watersheds. For the year following cutting, annual runoff was increased 65 percent, or 17 area inches. During the period of low flow, August to October, runoff was increased more than 100 percent. The total runoff for these months during the first year after cutting was 7.32 area inches, in place of 2.92 inches which would have occurred as computed from records before cutting. At no time of the year was there a significant increase in surface storm flow or changes in water quality.

On another watershed a commercial logging operation was carried out. Logs were removed by ground skidding without consideration for watershed values. In this case, the soil was disturbed by skid trails, and the quality of the water was definitely impaired through sediment and muddiness. Increased storm runoff appeared in the streams together with deposition of sediment in the channel which definitely altered the general appearance of the stream bottom. The skid trails continued to erode throughout the year, even after the logging operation was discontinued. It was evident that the practice of careless ground skidding is not compatible with good watershed management.

These results find immediate practical application in the southeastern states where there is a rapidly growing interest in obtaining more water for domestic and industrial use. Population increase and industrial expansion have forced many communities to seek new water supplies. In some instances it is possible to acquire additional areas, but in many cases expansion of municipal watersheds is impossible. The question arises whether it is possible through watershed management to augment the present water yield, particularly during the summer months when supplies are most critical. Where municipal and industrial watersheds are operated in connection with water treatment plants, methods of reducing transpiration by removal of vegetation growth has definite possibilities for increasing summer streamflow.



All trees and shrubs were cut, but no products were removed, and the soil was undisturbed. Result: a 65 percent increase in water yield

Many large municipal and industrial watersheds support valuable commercial timber, not being harvested for fear of jeopardizing the yield and quality of water. If it were possible to determine a way to remove the timber as it becomes mature without damaging the quality of the water, this would be good business. At the same time the cutting would contribute to increased water yield—a definite step toward better watershed management. However, where there is no water treatment plant, distinct disadvantages might arise from increase in muddiness and sediment due to logging. Studies are now being planned to learn whether by improved skidding methods it is possible to reduce the amount of soil and sediment that now gets into the streams.

The effect of cutting only the stream bank vegetation has also been studied. In this case all trees lower than 15 feet above the level of the streambed were cut and allowed to lie where they fell. The width of the cut strip was about 60 feet on each side of the stream—an area equal to 12 percent of the watershed. Here again, the streamflow was increased without any disturbance to water quality. The first year after cutting, the increase in the base flow of the stream was about 20 percent. On the basis of these results similar streambank cutting will be tested on a much larger scale along the major streams of the forest.

In all the tests where the soil was not disturbed, there was no damage to water supplies and the removal of the vegetation has increased the streamflow. Where the soil is disturbed, as in the case of logging, both the quality of the water and the uniformity of streamflow have been altered unfavorably. These principles substantiate the opinions expressed by foresters who have studied the subject in the past. However, the findings on the Coweeta Forest do furnish new and valuable data as to the magnitude and importance of the effects of cutting on seasonal streamflow and total water yield.

To determine the effects of steep land agriculture on water values, a forested watershed was cleared and converted into a small mountain farm. Local farm practices were followed. The cultivated land was planted to corn for four successive seasons.

As long as the organic material remained in the soil, its physical structure did not break down and there was very little change in the infiltra-

tion of rainfall. Practically no sediment was carried from the area for the first two years, although the slope averaged approximately 30 percent and had every opportunity to erode when cultivated. By the third year much of the organic material in the upper horizons of the original forest soil had disappeared. The loose crumb-like texture of the soil particles became broken down to single grains, which favored their compaction and tended to seal the soil surface.

This change in soil structure and sealing of the surface brought about a marked decrease in infiltration. Active erosion and surface soil losses occurred. Surface storm runoff increased, and peak discharges increased 10 times over those recorded before clearing and cultivation. It is obvious that a satisfactory soil structure is present when the land is first cleared of trees but that this structure breaks down rapidly under clean cultivation. This means that steep mountain slopes cannot be cleared and cultivated for more than a few years without having disastrous effects on watershed values.

The effects of heavy grazing on water values were also studied. A complete forest watershed was fenced and cattle were placed on the area for six years for the season of May 15 to September 15. The native legumes and grasses practically disappeared and valuable tree reproduction such as tuliptree, black locust, and white ash were heavily browsed. Red maple, which is not wanted in the forest, was browsed very little, and consequently increased in proportion to better species. Trampling effects on soil structure were indicated by reduction of porosity in the upper soil horizons, the porosity in the first six weeks being reduced more than 10 percent by volume. This change is now beginning to produce an increase in storm runoff. The experiment showed that trampling effects brought about by heavy grazing of forest land reduces the capacity of the soil to store water during storm periods, and reduced storage capacity is the first step in rendering a watershed less effective in the control and regulation of streamflow.

Studies to be undertaken in the future include the effect of forest fires on water yield and quality; water use by different kinds of vegetation as a guide to best stand management—for example, the effect on water yield of removing dense understories of rhododendron and laurel and the effect of removing defective old growth hardwoods; the effect of watershed management on game fish production as related to stream silting by logging, road construction, and soil cultivation; and the effect of cutting stream bank vegetation on stream temperatures and water quality.

Entirely apart from the land management studies, the Coweeta Forest offers an unusual opportunity for an outdoor study of hydrology and stream hydraulics, particularly flood waves, channel storage, and the synchronization of flood peaks from tributary streams.

A study of the watershed records has already led to a better understanding of some of the basic concepts of streamflow. For example, during certain types of short intense storms, the undisturbed forest areas produced a storm runoff pattern that resembles the general pattern of runoff from relatively impervious land surfaces. Not until accurate measurements of the width and length of the stream channel had been taken on carefully surveyed experimental watersheds, however, was it possible to prove that this was due to the amount of rainfall that falls directly within the stream channel.

Long continued storms with low rainfall intensity provided a more complex problem. Here the amount of storm runoff was far in excess of channel precipitation. The low rainfall intensities precluded the possibility of inadequate infiltration into the forest soil. Study of Coweeta

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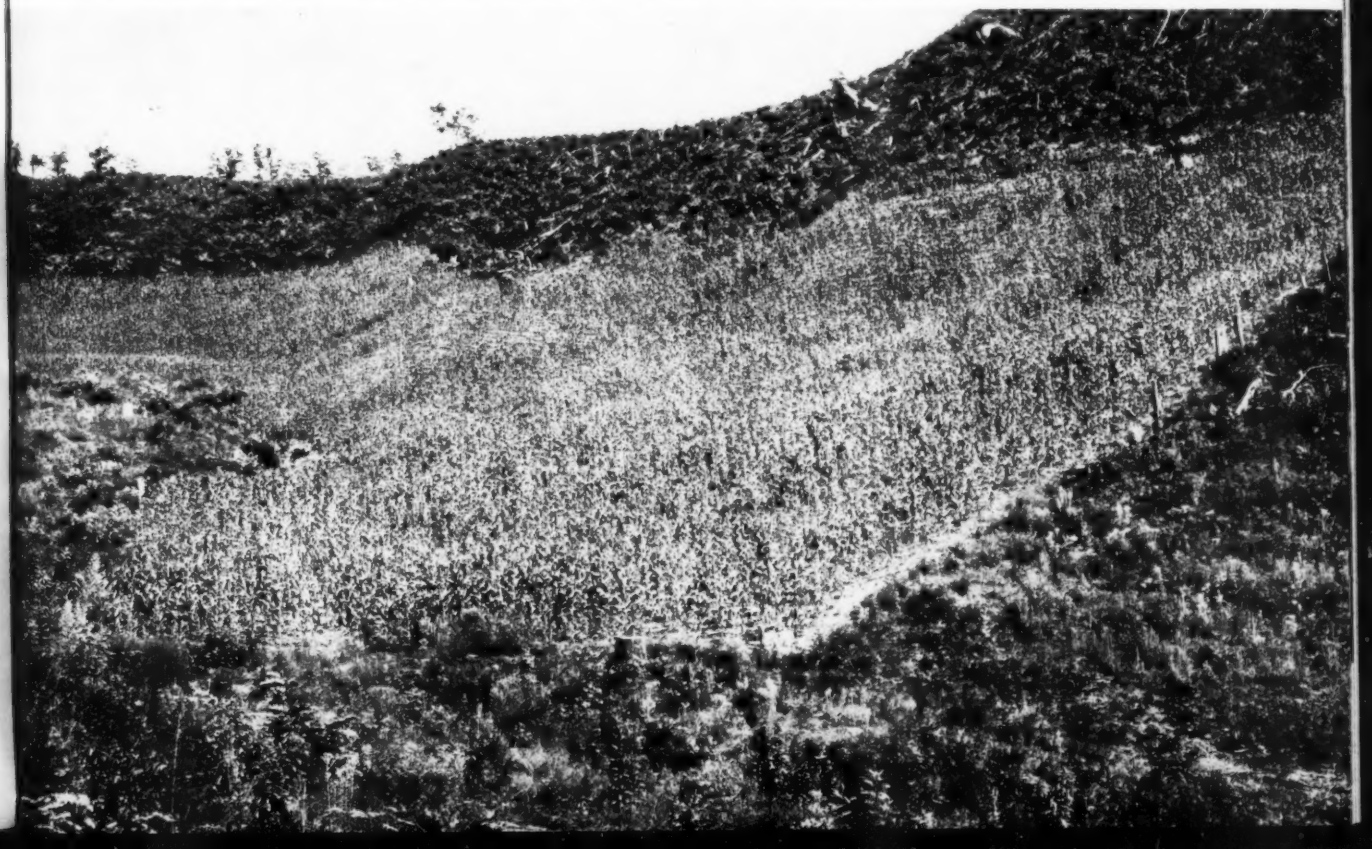
Three years after clearing and cultivation as a typical mountain farm, this area was no longer effective as a water reservoir. Surface storm runoff peaks increased 10 times over those of the area when forested



Christmas TREE COUNTRY

U. S. Forest Service Photo

By JOHN F. PRESTON

WHEN they visit the curbside market to select a tree for Christmas, most city-dwellers are concerned mainly with an evergreen that appeals to their individual sense of beauty. Unlike their rural cousins, or those living within or bordering on our great evergreen growing areas, they seldom give a thought to the tree itself, where it came from or the circumstances under which it was grown. Thus much of the colorful story of the tree that symbolizes the spirit of Christmas in their homes is lost to them.

Perhaps something of this background can be given the citybound Christmas tree buyer through reflections of the writer, a forester whose trails have carried him through much of our Christmas tree country. Indeed, it might be said that the life of a forester is amidst the forests that are the homes of our Christmas trees, for the pines, spruces, firs and cedars —the conifers or evergreens we associate with Christmas—form 50 percent of the forests of the United States and 70 percent of those in North America.

In my childhood I lived on the edge of the Great Plains where our only evergreen tree was the eastern redcedar or juniper, and this was our Christmas tree. In those days, our Christmas ritual did not include a tree at home, but we always had an enormous cedar in the church. These cedars were also planted profusely in our cemeteries. In Sunday School we read about the cedars of Lebanon with which Solomon built his temple. The redcedar thus has become associated in my mind with churches and cemeteries.

The leather stocking tales of James Fenimore Cooper and the fascinating histories of Francis Parkman first created my interest in the forests. The conifers always had a special appeal, perhaps because of their association with things primitive and wild. Our hardwood forests were associated in my mind with civilization. They are beautiful, hospitable, warm and congenial. They produce our spring wildflowers; they grow on our good soil; they are associated with home comforts. The coniferous forests are no less beautiful, but they are likely to be austere and inhospitable. They extend beyond the haunts of men to the bleak tundra of the Arctic plain and in the mountains, right up to timberline. They have a wild, primitive appeal.

Vividly do I recall my introduction many years ago at the magnificent evergreen forests of northern Idaho. In those days that country was a wilderness of white pine, cedar, hemlock, fir and larch. These great trees formed a solid green mantle over valley and mountain, broken only by thousands of lakes. Viewed on a spring morning with the sun breaking through the mist, this country was a paradise of primitive grandeur. To me, its appeal was heightened on closer acquaintance.

King of this forest was the white pine, first cousin of the eastern white pine and of the California sugar pine —a truly great tree. It has, at ma-

A glimpse into the forest home of your favorite Christmas tree—with a veteran forester as guide

turity, the grandeur, strength and wildness of a lion. In youth it is gentle, graceful and beautiful. Here I first appreciated white pine as an appropriate tree for Christmas. For this purpose it has, in my opinion, no superior. It has long, blue-green needles. Its branches are stiff, yet flexible enough to give grace and charm. The needles stay on indoors better than those of most trees.

I well recall my first Christmas in northern Idaho. Instinctively I looked for the cedar of my youth, but was quick to appreciate the attractiveness of the white pine. It has been my favorite Christmas tree ever since. Years later, in Pennsylvania, I had a succession of white pine growing in the garden with one ready to cut for Christmas every year.

However, one chooses a Christmas tree from those which are readily available. In western Montana this proved to be the Douglasfir, another wonderful tree which rules supreme in much of our western forests. In appearance it resembles the eastern spruce, but has softer needles and usually a better rounded top. During my stay in Montana, I could go to the woods and cut this tree and drag it into our hearth.

In those days the Christmas tree business in western Montana was purely local. Thirty years later, the cutting of Douglasfir for Christmas became big business. Hundreds of thousands of trees are now shipped out annually to the Great Plains and the Mississippi Valley for the Christmas trade. Cutover lands in western Montana are being managed for Christmas trees as the principal crop. Douglasfir is rapidly winning its place in competition with the long favored spruce.

Out of the great North Woods of the United States and Canada comes the really great harvest of Christmas trees for the millions of people in the East. Spruce and balsam fir are the favorites, perhaps because they are offered in such quantities. Who am I to say that a white pine or Douglasfir is a better Christmas tree?

The Christmas spruce is mostly the black spruce that comes from our northern swamps, largely because the growth is concentrated here and it is easy and cheap to get it in the required quantity. The black spruce has beautiful dark green foliage, but it lacks a little in the fullness of its crown. The greatest difficulty with spruce is the length of time that must elapse between cutting in the fall and the time it is delivered to the consumer. The warm air in our homes often causes the needles to drop after a few days. The balsam fir is better in this respect, partly because it is often cut at shorter distances from the consumer.

These great forests of spruce and fir—pure spruce in the swamps—are mixed with poplar and birch in the uplands. They stretch from the highlands of New York in a wide belt across the United States and Canada to the limits of tree growth in the Arctic wastes. At the southern end of the belt the spruce and fir are mixed with pine and hemlock and with hardwoods. The hardwoods are on the uplands and often are unmixed with conifers—our famous beech, birch and maple woods.

Winter is the really grand season in the North Woods. Then there is complete freedom from insects. The windfalls are covered with a deep blanket of snow; streams and lakes are frozen and there is little difference between the swamps and the highlands. The world is a winter woodland — groups of white birch, yellow-green aspen and the dark spruce and fir. Traveling is good, provided there is a crust on the snow, and that, of course, comes and goes. The colder the weather the better the traveling. A forester can accomplish much more in the winter than at any other season.

Winter work requires good warm clothes, a good tent camp pitched on top of the snow, heated by sheet iron stoves, and eiderdown beds on balsam boughs. With these he has complete camp comfort. The woods shut out the wind, and activity keeps up circulation of the blood. Moving camp by toboggans on the snow is hard work unless the crust is just right, but it is much easier than by man-pack, often necessary in the summmer or fall. Moving by dog teams, however, is the ideal way, but they are not always available.

One thrill of the winter woods is the gray timber wolf that gives forth unearthly sounds in the winter night. In the comfort of a camp he entertains and inspires stories of adventure. On the long trail to camp in the gathering dusk, those sounds develop queer feelings up and down the spine and lengthen the strides to reach camp. I have never heard of casualties from the gray wolf, but the mere knowledge that these beasts are trailing makes even the most experienced woodsman uneasy.

This is the great North Woods which is the source of the bulk of our Christmas trees.

The lowly scrub pines that grow throughout the East do not have the shape or the groomed appearance of the spruce, balsam, Douglasfir, or white pine, but they are plentiful and they are cheap. When they are dressed for Christmas, they proclaim the Christmas spirit. They have the added advantage that they are cut from neighboring forests and they stand up well indoors.

When I lived in Pennsylvania I discovered red fir trees that originated in the high mountains of California for sale at a street corner stand. They are great trees in their native haunts and beautiful specimens for Christmas, and apparently they found a ready sale. But I was glad that I had white pines in my garden ready to cut. Those trees had already paid their way in the satisfaction of planting, tending and replanting and in their scenic effects. To me they gave the tie-in with the greatest forests of the Northeast, the Lake States, the Northwest and the Sierra. Here I had the living, breathing symbol of the greatest forests of the world and one of the most useful trees to mankind. My white pine embodied the symbolism of the woods as well as of Christmas.

A beautiful corner of Christmas tree land near Mt. Hood, Oregon

Photo by Irving B. Lincoln

TRAVELS OF A FORESTER IN JAPAN

By A. R. SPILLERS

The author, a Lieutenant Colonel of Engineers, organized the Forestry Branch of the Natural Resources Section of General MacArthur's headquarters staff in Tokyo. Earlier, for developing an intelligence service in China, he was awarded the Legion of Merit. He is now serving as chief of the Division of Private Forestry in the Washington Office of the U. S. Forest Service.

OUR PLANE landed at Atsugi, one of the largest airfields near Tokyo. It was a dreary rainy day in September, brightened only by the fact that we had just missed a typhoon that laid waste much of Japan's rice crop. By American standards Atsugi was a poor field. The surfacing was thin and bumpy and the buildings were of flimsy sheet metal construction. The Jap attendants — sickly-looking 4-Fs in uniform—contrasted sharply with the Jap soldier of the outpost.

My mission was to become chief of the Forestry Division GHQ, at Tokyo, and, to be perfectly frank, I accepted it with a great deal of reluctance. Having seen the Jap Army's misconduct in China where the war's end found me organizing a Chinese engineer intelligence outfit, I held the opinion that the only good Jap was a dead one and that the occupation should be severe. This, as I was later to find out, wasn't quite the case.

Shortly after landing at Atsugi, we headed for Tokyo over a dirt road so narrow that our truck almost touched the houses on either side when it passed through the villages. Needless to say, the Americans had already given it a one-way designation—this despite the fact that it was one of the main highways in Japan.

The road wound through rice paddies and neat, hand-planted forests of pine or bamboo, and we began to realize the truth of what we had been told, that Japan is a rural country with more than 46 million of her 72 million people living outside the cities. Another thing that quickly impressed us was that everyone we observed working was doing by hand what we would have done with machines. There were no tractors, no

Clad in rags, straw shoes, dog skin wrap and neck towel, the Jap logger sings as he works

reapers, no machines of any kind in sight. On the road, of course, we came upon an occasional charcoal-powered car or truck, always dilapidated, but most of the traffic was ox-carts, bicycle carts and pull carts, and people of all ages carrying prodigious loads. Throughout the country and little villages, at least, Japan seemed to have remained in the ox-cart era.

Fortifications and tank traps were in strategic spots. Every stretch of the road was in range of a carefully placed gun. On all sides, as a formidable and ominous backdrop, were the steep dark mountains. I gave a silent prayer of thanks that it had not been necessary to cross the beaches and rice paddies under fire and fight on up into the mountain to conquer the Japs.

In Yokohama I saw the first evidence of the great destruction of our fire bombs. I had seen burned-out villages in China and the shot-up masonry of Manila, but never had I seen anything so completely ruined as this Japanese city. For miles all that was left standing above great stretches of rubble were a few fire-proof buildings. In many blocks only a solitary chimney or fire-proof safe marked the spot where once stood a factory or department store. Twisted steel lay everywhere. One soldier remarked, "Well, the Japs always wanted plenty of scrap iron; now they have it."

From Yokohama to Tokyo railroads were intact and running. Somehow they escaped the inferno of our gelatin fire bombs. So intense was the heat from these bombs, however, that in places steel girders buckled and twisted, telephone poles were left as charred stumps and logs in water storage burned to the water level.

Tokyo had fared little better than Yokohama. Most of the Imperial Palace buildings and a few modern fire-proof structures remained, but Tokyo also was a broad expanse of ashes. People of all ages were grubbing about in the rubble, their stoical Oriental faces hiding a world of misery.

Since one of my jobs was to keep a finger on the operations of the lumber industry throughout the islands, I left the rubble of Tokyo one clear sunny day in November for Hokkaido, Japan's large northernmost island. Here, I had been informed, were to be found some of the finest timber stands and the best sawmills in all Japan. At least two-thirds of Hokkaido was in forest, and logging operations were centered pretty much in its interior. Lumber was hauled out to the ports over a narrow-gage

Narrow-gage railroads and "teapot" locomotives provide log transportation in Hokkaido

railroad which made a loop around the interior, with spur lines fingering into the mountainous center of the island.

Northern Honshu was ablaze with autumn colors as we flew from Atsugi over Sendai, about 200 miles north of Tokyo, then along a valley flanked by high mountains to Aomori, a big port on the northern end of Honshu. So clear was the day and so smoothly flew the C-47 that the pilot took a short cut of 100 miles across the ocean. This had us above Tomakomai, a pulp mill town on the south coast of Hokkaido, in short order. According to the pilot, the main smokestack of the sprawling mill below us, Japan's largest, had been damaged by a direct bomb hit. This mill, incidentally, was designed and built by an American engineer 40 years ago.

At our left was the beautiful Shikotsu Lake, and a tall active volcanic mountain. An American flier had bailed out in the Imperial forest on this mountain and had lived for six months on trout caught in the lake. He knew the war was over when he saw American passenger-type planes flying around. When he came out of the forest the local people held celebrations in his honor.

Our plane landed at Chitose, the big northern air base of the Japanese Air Force, and from there I went by jeep the remaining 25 miles to Sapporo, capital of Hokkaido. One of the first things to catch my eye was a sign commemorating two American agriculturists who had led in the settlement of Hokkaido.

Chief Forester Mizuno of the Hokkaido Prefectural Government was on

hand to show me the area. He had the typical buck teeth, grin, and dim eyes of the Japanese but he was different from most of their bureaucrats. Mizuno was a man of action. It was noon but he said he could have everything arranged by train time. Sure enough, when I caught the train, Mizuno and his two assistants handed me a typed program of the places we would visit and the people we would see in the next three days—indeed for every hour of each day! Never did we get off schedule. Mizuno often became frantic and waved his hands, shouting, "No time!" Since the train could not go without us, he alone was worried. To this day he is known by American foresters in Japan as "No-Time" Mizuno.

A pullman-type car was provided for my party. It was the first time, we were told, that such a car had made the loop since before the war. The berths were narrow and short, so that average or large-size Americans were crowded. The train, however, ran smoothly. Many of the train crew and station workers were women.

In the morning we awoke to find our car at Rubeshibe, and all the forestry personnel of the Rubeshibe State Forest awaiting us. Two porters were furnished for each American, and the entire party stopped traffic in the main street on the way to the supervisor's office, which was the finest building in town. In forestry, the Jap has imitated the German both in silviculture and in the relatively high position of the forester in the social and economic life of the community. After a breakfast of soup, fish and rice, many introductions, a brief description of the local forest by Mizuno and the supervisor and many cups of tea, we left on a branch line railroad. Six of us sat in a special car and huddled around a charcoal brazier.

As the teapot-size locomotive chugged up the mountain, the supervisor told us some of his problems. If he could only get a few kilometers of steel rail he could open up, for logging, thousands of acres of good timber. And he needed woodsmen. The old-type logger was fast disappearing, the supervisor said, and war veterans were not returning to their woods jobs. Everyone, it seemed, was out "scrounging" around the countryside for food and not tending to his work.

Indeed, the extreme importance of food was in evidence everywhere. At the ranger station where we stopped for lunch, the ranger brought me a small wicker basket in which were two Irish potatoes and a piece of pumpkin. This, he explained, was all his workers would have to sustain them for the afternoon's cold, hard work. I suggested that we all try it but the supervisor thought I was joking. Instead, we had a 12-course meal which was too much to eat. This, for the moment, ruined the demonstration of the food shortage.

That afternoon we inspected a logging operation. Except for the loggers, it could easily have been a scene in New England—steep, mountainous country at about 4,000 feet elevation, plenty of snow, and timber types of spruce, fir, larch, beech, birch and maple. Horses were used in great numbers. Skid roads and "go-devil" sleds added to the similarity. Timber cutting practices, however, based upon a light selection system, which left plenty of thrifty growing stock, were far better than the average in New England.

The Jap logger has no human counterpart. He subsists on a meager vegetable diet. His clothes consist of rags, straw shoes, a dog skin thrown over his back, and a towel-like cloth wrapped around his head, ears and neck. Often he sings as he works. A number of them working together to snake a log down the mountainside to the skid road will sing as the leader chants his orders. Their favorite tool is a combination cant hook and peavy without the hook, but with a sharp-pointed end and a flat hammerhead back. They spike the log, give it a pull or push and quickly release their implements. Saws are all one-man type, even for felling. Their axes are broad-bladed with narrow heads.

Loggers and their famiiles live in crude communal huts. Practically no light, ventilation, medical or sanitary facilities are available.

For three days we visited forests and sawmills, and by the time we returned to Sapporo we had the answers to some of our problems as to where and how to obtain timber for the occupation forces and to maintain at least a minimum Japanese civilian economy.

At Sapporo I reluctantly bade good-bye to "No Time" Mizuno and his aides. My plans for a three and one-half hour flight to Tokyo were

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The spruce, fir and hardwoods covering Japan's steep mountain slopes reminded the author of New England

DE-NAZIFICATION OF GERMAN FORESTERS

By EDWARD RITTER

Nazi indoctrination and Military Government counter measures are explained by a former chief forester for Greater Hesse

To a German scientist being considered for appointment as a co-operator in the Prussian State Forest Service in 1943, a Nazi official addressed a letter decrying his lack of participation in the Nazi Party activities, and closed with this statement: "I expect your report by October 15, telling me in what part of the party you are active." This letter, dated April 2, gave the applicant about seven months in which to prove himself, not as a forester, but as a good Nazi.

With this example in mind, one can fully appreciate the intent of the de-Nazification policy adopted by the Military Governor of the U. S. Zone of Occupied Germany. Its broad measures were necessary. In its detailed application, however, it raises practical problems. One question is whether enough qualified foresters can be found to rebuild and maintain the German wood economy until a non-Nazi class can be trained and brought along to fill their places.

If a great number of German foresters were at least "party-affiliated," it was not surprising, for forestry was directly under a fanatic and particularly exacting *obermeister*. Prior to the military collapse, German forest administration was centralized at Berlin under the direction of Herman Goering, chief forester or *Reichforstmeister*. Immediately after occupation by allied armies there was little semblance of the former forestry organization as personnel had fled across the Rhine or were in hiding. Records were removed or destroyed.

The task of re-establishing forest administration was assigned to military government, along with numerous other jobs of reconstituting a disrupted and demoralized civil administration. West of the Rhine long before V-E Day forestry headquarters at Aachen, Dusseldorf, Bonn, Trier, Koblenz and Speyer were visited only to find a dearth of records, practically no personnel and a fairly complete breakdown of the forest organization. In the Rhine Provinz, pending better organization, it was necessary to attempt to re-establish forest administration on its own, and independent of any higher echelon of government at that time. To staff the job and produce needed wood, numerous German foresters were brought out of hiding, interviewed, recommended to the newly appointed Minister President and placed at the disposal of a chief forester—*landesforstmeister*—who was to be under the direction of the Minister of Agriculture.

Among those interviewed, only one appeared to possess the desired qualifications—education, experience, aggressiveness, personality, tact and administrative ability—to head up forestry in the Rhine Provinz. This German forester, a former *oberforstmeister* at Koblenz had, however, joined the Nazi party in 1933. He had not been a leader in any of its affiliated organizations. Information gleaned from various sources indicated he was not a party member at heart, but had been obliged to join the party, resign, or be relegated to some insignificant job divorced from his chosen career. Since a leader in forestry was urgently needed and it was essential to re-establish a civilian service organization to meet military lumber production requirements, special consideration for a temporary appointment was given to this man and others like him, providing nothing more than nominal participation in the Nazi party was proved.

On the other hand, two foresters who were non-affiliates of the party, were interviewed and recommended for employment. Later investigation revealed they had been in sympathy with Nazi ideals and had done everything in their power to become members.

It is difficult to get the facts in such cases. Just how deeply Nazism is imbedded in any German may not be revealed by a brief investigation. The urge to adopt Nazism was strong. For a German who had studied and practiced forestry all his life and was employed by his government in a so-called career-service, the government's directives did not leave much choice. The "pressure was on" from Berlin.

For example, as early as March 8, 1935, Herman Goering issued the following special order as Prussian Presiding Minister: "As a matter of principle we must maintain that especially in the country districts the activity of the foresters in the service of the party and of its branches is particularly desirable and that not only for the benefit of the party but also for the benefit of all forest administration with the final goal of a unity of NSDAP and the German Empire."

In a general order for all ministers of the German Empire, dated November 1, 1935, the status of aspirants to positions in forestry and other government employment was clearly outlined: "Nobody can obtain any official position who is not sure to represent without any restriction and at any time the Nationalsocialistic State. . . . It is necessary that in the future all candidates for office be trained, from early youth on, in a nationalsocialistic atmosphere. No candidate can be admitted who can not prove having been in his youth a member of the Hitlerjugend. . . . Exceptions from this ruling cannot be made without the consent of the Minister."

With a nation at boiling point, what candidate for a forester's position would want to undergo the scrutiny necessary to an exception to this ruling?

Not only were the foresters themselves given the pressure treatment; it went beyond them to include their families. On November 7, 1935,

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Save your PLANE TREES

Canker stain has taken a high toll of one of the East's favorite street trees. Now pathologists have uncovered many of its deadly secrets which will help in its control

By KATHERINE HEINOLD

THE most famous street tree in the world now is being saved from its death march in eastern United States. A killing disease, baffling until now, has met its Waterloo.

Forest pathologists of the federal Bureau of Plant Industry, Soils, and Agricultural Engineering are the heroes in this rescue. The elusive, deadly enemy is canker stain. And its prey is the London planetree.

The London plane is thought to be a cross between the Oriental plane and our native buttonball—often called sycamore. It is used as a shade tree in cities, towns, and highways in an area that might be bounded by a line running from New York through Washington, Roanoke, St. Louis, and Pittsburgh. And now West Coast cities also have plantings of it. Its enemy, canker stain, has not yet reached that far. The canker stain area might be likened roughly to an arrow reaching from Vicksburg north to Pittsburgh, and the Atlantic Ocean by way of New York and Norfolk.

In cities in this eastern area the London planetree has been dying by the thousands. These cities have invested over $1,500,000 in this street tree. Canker stain has already cost them over $400,000.

To prevent and control canker stain means a gain of around $35 for every tree saved. That's about what it cost in 1940 in the Philadelphia area to remove a dead tree and replace it with a young one. Saving a tree is a gain of more than $35, however, because dead and dying trees on streets detract from property values.

Back in 1929, a plant pathologist noticed the dying planetrees in Gloucester, New Jersey. Dr. R. P. White, of the New Jersey State Agricultural Experiment Station, New Brunswick, was research specialist in diseases of ornamental trees. He made cultures which yielded a fungus of the type which scientists now know causes canker stain. (The disease takes its name from the reddish brown or bluish black stain the fungus gives the wood.) But Dr. White made no formal report on his observations.

Lining many streets and roadways from Mississippi to New York City are planetrees in various stages of approaching death. When dwarfed and yellowed leaves appear, the trees are doomed

James M. Walters

The disease was described, though, only a few years later. Forest pathologists of the U. S. Department of Agriculture began official study of it in 1933 in response to appeals by residents and tree wardens, in one of the Philadelphia districts, who were concerned over the death rate of the London planetrees on their streets. Dr. L. W. R. Jackson, of the Division of Forest Pathology, answered their call. His time for this study was limited to what he could spare from his other official duties, but by 1935 he was able to describe the disease. And in 1937 he and Bailey Sleeth published their findings.

Since Dr. Jackson's work, pathologists have carried on intensive field and laboratory research. The disease, they found, can be readily controlled. Municipal authorities welcome the control measures recommended by the federal scientists. And, working under the general supervision of forest pathologists, they are controlling and wiping out the disease in some cities.

Many municipalities already have refused permits for pruning until line-clearance crews can give assurance that their work will be such that canker stain will not set in. Large public-service companies, too, are giving their cooperation. They have modified their line-clearance operations to provide for the use of the control measures that federal pathologists recommend.

These control measures are simple and can easily be used. It is not hard to recognize the symptoms of the disease. "In two days," says James M. Walter, forest pathologist, "any qualified arborist can learn to recognize the symptoms by examining diseased trees and comparing them with non-infected ones."

Even you and I can learn to recognize some of the symptoms. And we have to know symptoms early, before a disease gets too much of a start. Until now, dead and dying trees have probably been our first warning of danger to our planetrees. But at that stage it's too late to help.

Left, a branch infected at scratch made by a pruning saw. Right, similarly caused infection on tree trunk

Dying planes detract from property values and cost more than thirty-five dollars each to replace

James M. Walters

Too late also is the warning you get from dwarfed and yellowing leaves. When the fungus has made itself at home in the trunk long enough to cause the leaves to dwarf and yellow, your planetrees will most likely die the next year. Of course, if only some of the branches show withering leaves, you can cut them off. It's well to watch for early signs of infection.

Watch that part of the branches or trunk where the dark outer bark sheds in scales or patches and leaves the smooth greenish or cream-yellow bark showing. If in this new bark you see brownish or black lens-shaped spots or longish lines from one half to two inches wide and 20 to 40 inches long, you may be reasonably sure the deadly disease has set in. If left alone, the cankers widen each year until at last they grow together. A single infection may kill a trunk one foot in diameter in three to five years.

Where canker starts in a branch it may finally reach the trunk and girdle it. If only a branch is infected, you can save the tree. Forest pathologists advise cutting off the branch three feet back of the canker to remove all infected wood. But once the trunk of a London plane is infected, the tree is doomed.

If you want to be on the safe side, avoid infecting your planetrees. That's important. And infection can be avoided. Forest pathologists now have found that man in trying to care for the planetree, is spreading the fungus. Pruning tools can carry the fungus from diseased to healthy trees.

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John J. Audubon

WHERE AUDUBON HUNTED

By HARRY STANTON TILLOTSON

JUST beyond the present village of Audubon, Pennsylvania, on a side road that leads from the old Egypt Highway, is the entrance to the estate where the great ornithologist and painter of American birds, John James Audubon, began the immortal work for which he is noted.

As one enters the beautiful grounds, the upper part of the old Mill Grove residence is visible. This is the approach to the east side of the house which sits high on an embankment overlooking picturesque Perkiomen Creek. Almost opposite the mouth of this creek as it empties into the Schuylkill River, is historic Valley Forge.

Captain Jean Audubon, father of the naturalist, while engaged in the West Indian trade, amassed a considerable fortune, and purchased the Mill Grove estate as an investment. The property, at the time of young Audubon's arrival in America in 1803, was heavily wooded with primitive growth. The elder Audubon had early noticed his son's excessive interest in nature, particularly in birdlife. But he planned a career in the French navy for young Jean Jacques, as he was then known.

The boy's persistence in pursuing his natural bent for nature study and sketching, however, finally impelled his father to send him to the Pennsylvania estate. Captain Audubon believed that the responsibility of assisting in its management would help divert his son's mind from nature study. In this he was completely mistaken, for the woods at Mill Grove and vicinity abounded in wildlife.

Audubon, now about 18, lost no time in becoming acquainted with the characteristics of birds and quadrupeds. The house was then occupied by Quaker tenants, and Audubon's attic room was soon transformed into a miniature natural history museum. At a window that afforded a good view of the Valley Forge country the young naturalist "stuffed" his birds and studied them in detail.

Before leaving France he had studied for a while under the French painter, David, and he was now ready to apply his knowledge of drawing to the painting of American birds. As a visitor to Audubon's room at this time described it: "The walls were festooned with all sorts of birds' eggs, carefully blown and strung on a thread. The chimney piece was covered with stuffed squirrels, raccoons and opossoms and the shelves around were likewise crowded with specimens, among which were fish, frogs, snakes, lizards and other reptiles."

Sometimes, however, he didn't wait to stuff his models but held the dead birds in position by an ingenious arrangement of cords by which they were made to appear in natural attitudes. Shortly after his arrival at Mill Grove he wrote in his journal: "Hunting, fishing, drawing and music occupied my every moment; cares I knew not, and cared naught about them. I purchased excellent and beautiful horses, visited all such neighbors as I found congenial spirits, and was as happy as happy could be."

One winter day while hunting grouse along the creek, Audubon met another hunter and neighbor, William Bakewell, owner of the beautiful estate, "Fatlands" or "Fatland Ford," a quarter of a mile from Mill Grove. Though Bakewell was an Englishman and Britain and France were then at odds, young Audubon overcame his national prejudice when he found that the other hunter and he had many tastes in common.

The result of this chance meeting had a profound effect on Audubon's later life. He visited Fatlands to examine its owner's mounted birds and it was here that he met Bakewell's daughter, "Dear Lucy," who later be-

came his wife and whose touching devotion and courage played an important part in his career. Their romance quickly developed and Lucy taught Audubon English while he, in turn, gave her instructions in drawing.

It had long been known that there were lead deposits present on the estate and Captain Audubon had sent an agent, Dacosta, to develop the mine. Dacosta, who had purchased a part interest in the property, exercised a guardianship over young Audubon but the two proved so uncongenial that the boy sailed for France to explain matters to his father. After a year in France, Audubon returned with a young man named Rozier who with him and Dacosta was to be a partner in the mine project. Apparently this arrangement proved disappointing because for several months Audubon was employed by Lucy's brother, Benjamin, in New York while Rozier acquired some business training in a Philadelphia commercial house.

Soon the two young men were engaged in peddling goods through the Ohio Valley. After the establishment of a store at Louisville, Kentucky, Audubon in March, 1808, returned to Pennsylvania to marry Lucy. The Mill Grove property was disposed of and Audubon is said to have invested part of the proceeds in the Louisville store which prospered largely through the sound business judgment of Rozier.

The marriage of Lucy Bakewell and Audubon took place at Fatlands on April 8, after which the couple started on the long trip to their western home. The journey as far as Pittsburgh was made in a shaky stagecoach which upset while passing over the Alleghenies, severely bruising the bride. At Pittsburgh the newlyweds boarded a flatboat on the Ohio and shared the limited space with a heavy cargo of merchandise.

Virgin wilderness along the river was the home of all sorts of game. During the numerous stops of the sluggish vessel, Audubon would shoulder his rifle and go ashore to procure a wild turkey or a grouse as a variation from the regular boat diet. Rejoining Rozier at Louisville, Audubon proceeded to make Lucy comfortable while he, half-heartedly, attended counter in the store. His enthusiasm for bird study drew him away from commercialism and he wrote: "My thoughts were ever and anon turning towards them as the

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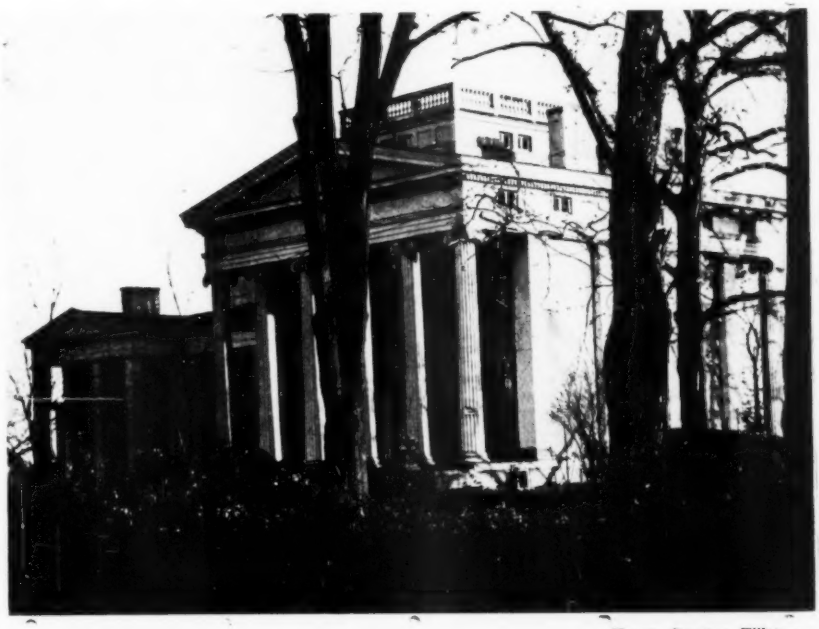
A career in the French Navy had been planned for young John James Audubon—but the primitive woodlands of Pennsylvania, where he was sent to divert his interest in nature, abounded in wildlife, and started him on the road to greatness as an ornithologist and painter

Harry Stanton Tillotson

In an attic room at Mill Grove near the present village of Audubon, Pennsylvania, the ornithologist began his immortal work



Harry Stanton Tillotson

Fatlands, the home of Lucy Bakewell, who became his wife and whose devotion and courage played an important part in his career

A Forest Co-op Goes SCANDINAVIAN

By J. A. COPE and W. W. CLINGAN

A visitor to Sweden or Finland who is at all interested in forestry will surely be shown some of the intensively operated farm forests of those countries. If he happens to be a forester from the U.S.A., he will find himself deeply impressed by the assurance with which reproduction cuttings, thinnings, and planting techniques are discussed by Scandinavian farmers. And it isn't all talk, as the forester soon learns when inspecting farm woodlands that have been under continuous management for decades.

L. A. Fisher, president of Tioga Woodland Owners' Cooperative, prunes his crop trees

All farm forests in Scandinavia are not on this high level, of course. These outstanding forest farmers are leaders in their communities who, in recognition of their accomplishments, have each been awarded by the forestry societies of their respective countries the title of "Master Forest Farmer." Such awards are comparable to the "Master Farmer" titles given by state agricultural socities in this country.

In Tioga County, New York, the Tioga Woodland Owners' Cooperative has been operating for the last 10 years in an effort to spread, in a small way, the gospel of woodland management. The board of directors, made up of local farmers in Tioga and Chemung counties, has been concerned that those members who stayed with the co-op during the war years and maintained their woodlands in the face of terrific pressure to liquidate, should have suitable recognition.

The "Tree Farm" idea so popular in the South and West was considered by the board and rejected as being not quite specific enough. When the Scandinavian "Master Forest Farmer" idea was presented, however, the directors were immediately receptive, and set about developing "entrance requirements" that would have real significance to those who might make the grade. After lengthy conferences at which the writers were interested participants, the following requirements for the awards were approved:

Any woodland owner in Tioga or Chemung counties would be eligible for recognition as a "Master Forest Farmer" provided he was a member in good standing of the cooperative during the four war years.

He would be required to own and operate himself at least 20 acres of woods, of which not more than five acres could be in forest plantations. A farmer with just forest plantations would not be eligible; nor would one who sold only stumpage.

During this four-year period, his woods must have been constantly protected from grazing, and evidence of care and precaution against fire must be apparent. Also, during this period, the owner must have directed and carried out each year cutting practices in accord with sound forestry principles.

For each year of operation, records must be available showing (1) the number of work hours spent in the woods, (2) the area covered, (3) the volume and value of material removed, and (4) the return per hour for such work.

In the fall of 1945, the board of directors of the cooperative released locally information in regard to the availability of these awards, and suggested that they were ready to consider applicants. Seven men were finally selected as having possibilities of qualifying, and a special committee of the board, with the junior writer retained as technical adviser, made a thorough inspection of the woodland properties under consideration. Six owners met the qualifications. Collectively, they owned 314 acres of woodlands.

At a special supper meeting in March 1946, the six farmers and their wives were guests of the cooperative. A handsomely engraved certificate was presented to each Master Forest Farmer. The cooperative association also provided for each an attractive roadside sign that he who rides by may read, "Here lives a man who manages his woods like any other crop."

Records of the results obtained by some of these Master Forest Farmers during the four year period are both interesting and enlightening.

Frank Hoffman of Waverly, owns 20 acres of woodlands. Prior to joining the cooperative he was offered $400 for all standing timber on a 12-acre block. It was a beautiful stand of hemlock and hardwood which averaged better than 13,000 board

Reaping a forest harvest that pays dividends, co-op members leave thrifty trees for a future operation

feet an acre. As a member of the cooperative, Hoffman had the entire stand marked for a selective cutting. In four years, the cutting was completed on the four three-acre subdivisions. Sixty-seven thousand board feet brought him a gross return of $1212. The present stand averages better than seven thousand board feet an acre and the current growth rate is calculated at 350 board feet an acre a year. Hoffman is now prepared to start over the block a second time.

Lew A. Fisher of Spencer, is another Master Forest Farmer who talks forestry in and out of season. In addition to managing his 30 acres of farm woods, his special pride is the two-acre red pine plantation he set out in 1924. Thinnings from the plantation present no problem to Fisher—he cuts, peels and seasons a bunch at intervals, gives them an overall treatment of pentachlorophenol, and sets them out as fence posts.

When it comes to showing a good hourly return for woods work, the Frisbee Brothers of Halsey Valley have something to talk about. They joined the cooperative when it was first started back in 1937, and have been cutting selectively ever since. Harry and Lyman Frisbee always kept records on their fine dairy herd, so it was no trouble to add additional columns for the woods work.

Here is a typical season's record: Work performed—313 man-hours, 80 team-hours, 19 tractor and buzzsaw hours. Material produced—2,800 saw logs, 80 cords of stove wood, and 200 fence posts.

These forest products were valued at the roadside at $407.50. After deducting team and tractor costs, the return per hour for woods work was $1.11.

One of the most satisfying woods operations, according to Hein Temple of Owego, is thinning in a sapling stand. He has five acres ranging in diameter from two to five inches and made up of the usual hardwoods—maple, basswood, oak and ash. Hein reports, "I purposely make the thinnings light and by the time I get over the whole block I am ready to start in to do the same thing again." Temple's return for woods work between farm chores during the winter of 1943-1944, was eighty-two cents an hour. His records reveal the following interesting information:

In cutting and skidding fuelwood and logs, he worked 467 hours, and used a team for 21 hours. Buzzing wood, using a farm tractor for power, took 28 hours. Incidental costs—gasoline, oil, trucking charges, etc.—totaled $40. The 108 stove cords of fuelwood and 4,200 board feet of logs brought a gross cash return of $420.

It is the hope of the board of directors as well as the writers, who have worked continuously with the cooperative, that the publicity resulting from these awards will act as a stimulus to increase the number of woods minded farmers in this area. Tioga is distinctly a dairy county. All these Master Forest Farmers own and operate substantial dairy farms. Trees and cows, they are finding, make a happy combination if they are not allowed to mix.

The "Master Forest Farmer" plan of Sweden and Finland has been adopted in New York to encourage woods-minded farmers

KNOWING YOUR TREES

CAROLINA HEMLOCK

Tsuga caroliniana Engelmann

By WARREN D. BRUSH

THIS comparatively rare tree is found principally along the rocky banks of streams in the Blue Ridge Mountains of the Alleghenies from southwestern Virginia through western North Carolina into northern Georgia at elevations of 2,500 to 3,000 feet. It generally grows singly, sometimes on almost inaccessible rocky ridges and cliffs, or in small, scattered groves, often in company with eastern hemlock, eastern white pine, silverbell tree, and various oaks and hickories.

The usual height of the tree is 40 to 50 and occasionally 70 feet with a trunk rarely exceeding two feet in diameter. The many short, stout, often pendulous branches form a handsome, compact, pyramidal crown which usually extends for two-thirds the height. The slender twigs are light orange-brown, covered at first with soft, fine hairs, later becoming smooth and dull brown.

The Arnold Arboretum

Attractive foliage, compact crown, drooping branches and its ability to do well in shady locations make Carolina Hemlock an increasingly popular ornamental tree

The dark green leaves or needles differ from those of eastern hemlock in two respects: they are slightly longer, one-third to three-fourths of an inch, and stand out in all directions from the branchlets instead of being conspicuously two-ranked. They are frequently notched at the end and the upper surface is lustrous with a conspicuous central groove while the under surface shows white bands on each side of the midrib made up of seven or eight rows of stomata.

The male or staminate flowers are small, nearly spherical, yellow bodies tinged with purple borne singly from buds at the bases of the leaves near the ends of the branchlets to which they are attached by thread-like stems. The purple, erect, female flowers which produce cones and seed are smaller, and grow at the ends of the twigs; they have broadly ovate bracts which are irregularly toothed on the margins and are about as long as their scales.

The short-stalked, oblong cones are somewhat larger than those of eastern hemlock, measuring from one to one and a half inches in length. The cone scales are narrowly oval, much longer than wide, and spread nearly at right angles to the axis of the cone at maturity; in contrast, the cone scales of eastern hemlock are no longer than broad and do not spread so widely when mature. There are two seeds about one-sixth of an inch long under each fertile scale. The seeds are about one-fourth as long as the pale lustrous wings which are broadest near the base and narrowed to the rounded apex.

The dark chestnut brown buds are more or less spherical in shape, nearly one-eighth of an inch long and are covered with fine soft hairs.

On the trunks of mature trees, the reddish brown bark, one to one and a half inches thick, is deeply divided into broad, flat, connected ridges cov-

ered with thin, closely appressed, plate-like scales.

The wood of Carolina hemlock is similar to that of eastern hemlock. The heartwood is pale brown tinged with red and is not distinct from the thin sapwood which is somewhat lighter in color. Because the supply is so small and so much of it is inaccessible, Carolina hemlock timber is of little commercial importance. Where it is cut, however, it is put to the same uses as eastern hemlock. The wood is coarse and uneven in texture, moderately light in weight, moderately hard, moderately weak, and moderately low in ability to resist shock. It lacks durability when subjected to conditions favorable to decay. The principal uses for hemlock lumber are for building construction and for boxes and crates. The wood is also very suitable for the manufacture of paper pulp by the chemical process. Hemlock bark is an important source of tannin used for converting hides and skins into leather.

Carolina hemlock bears seed frequently but usually not in abundance. Because of their small size and the large wings, the seeds are carried considerable distances by the wind, and seedlings are most common in moist, shady locations as they do not grow so well in strong light.

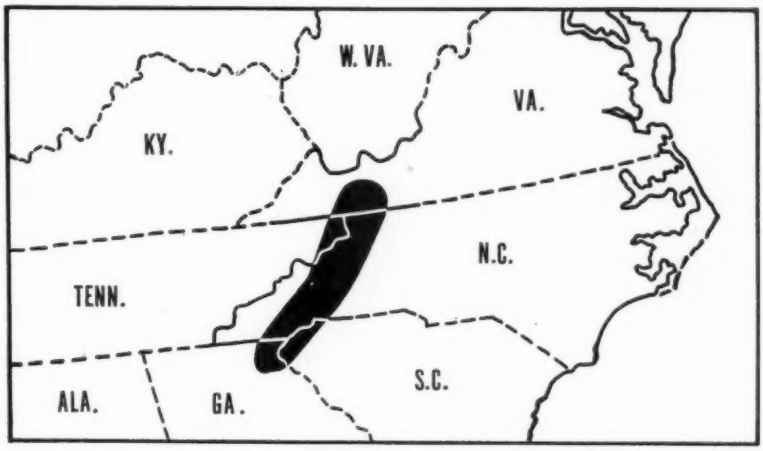
The tree is very desirable for ornamental purposes and has the advantage over many other conifers in that it does well in the shade. The attractive foliage, compact crown and drooping branches have served to make it increasingly popular for this purpose. It is often planted in the eastern United States and occasionally in Europe. Carolina hemlock seems to have no serious fungus diseases or insect enemies. When growing on thin soil the tree is often thrown by the wind because of its shallow root system, and it is also often killed by ground fires which burn through the humus.

U. S. Forest Service

The needles extend in all directions. Cones are short-stalked and oblong

U. S. Forest Service

The reddish brown bark on mature trees is divided into broad, connecting ridges



This comparatively rare tree is found along rocky banks of streams in the Blue Ridge Mountains of the Alleghenies, at elevations of from 2,500 to 3,000 feet

STATE-WIDE FIRE PROTECTION

By J. R. TILLER

South Carolina becomes the first southeastern state to organize intensive fire control on a state-wide basis

One of 31 new towers, bringing the state's total to 143

WITH the passage in 1945 of a state-wide forest fire protection act by the State Legislature, South Carolina becomes the first southeastern state to organize intensive forest fire control work on a state-wide basis.

This phase of its work was first initiated by the State Commission of Forestry in 1928, when private protective associations consisting of groups of landowners were organized. The first intensive protection work on a county-wide basis was begun in two counties in 1934. Ten years later this type of protection had been extended to 24 counties, and was cooperatively financed by county appropriations, matched by state and federal funds. With the passage of the state-wide fire protection act, counties previously making financial contributions for fire protection are relieved of such expenditures. The protection program for the entire state is financed by state and federal funds.

For each of the fiscal years 1945-46 and 1946-47, appropriations of slightly more than $604,000 for the state's forestry program were made available. Of this amount, $515,000 is allocated to forest fire control. This is approximately one-half the recently revised adequate protection figures for the next five year period for the 10,776,000 acres of forest land needing protection in South Carolina.

The expansion of fire control activities to all woodland areas necessitated the construction of 31 new fire detection towers and 400 miles of telephone lines to supplement existing improvements, bringing the total for the state to 143 state-owned, private and federal towers, and 2,231 miles of telephone lines. The tower system will be supplemented by airplane patrol. The telephone lines, connecting the new towers with local exchanges, will complete the basic communication system. Later, spur connections to headquarters of unit rangers and fire wardens will be made. The communication system will be further supplemented by use of two-way radio, which will greatly increase fire detection and control efficiency.

Through the combined efforts of personnel of the Commission of Forestry, the County Legislative Delegation, the County Forestry Board, and interested citizens, tower sites were obtained in areas which were blind to existing towers. Many tower sites were donated by public-spirited citizens, others were purchased by the counties for use by the Forestry Commission.

Selected on the basis of elevation above the surrounding terrain, the tower sites provide an average normal air-view of from eight to ten miles radius.

The 31 towers have been constructed by one foundation crew and two steel crews, employed and trained by the Commission of Forestry, at a cost considerably less than contractor's bids received. Telephone lines were constructed by the Commission's district rangers and state-trained crews.

The completion of the detection towers and the communications system, basic requirements to fire control, permits the organization of the control units to meet their fire presuppression and control problems. This next logical step in adequate protection is already planned and under way.

The unit fire control personnel for the 24 counties which have been cooperating in intensive protection for five to eleven years, are already organized and, to a large extent, trained and equipped. Twenty-two new fire control units will be organized, trained and equipped and ready to function this year.

In each county, a five-man county forestry board has been appointed by the Commission of Forestry to act in an advisory capacity in connection with the performance of the local protection program. The control organization consists of a unit ranger, two to five fire wardens and one to five towermen, depending on the woodland area. In each of the 23 coastal plain and sand hills counties, a tractor fire-plow operator is employed. This regular organization is supplemented, during hazardous fire periods, by flexible fire crews.

The organization does not take over the responsibility for control of fires from the landowners and local residents, but it is designed to assist landowners through leadership, a small force of trained men, and suppression equipment. Many landowners and other persons have volunteered their services in fire prevention and suppression by joining the state-organized Forest Fire Fighters Service. These community crews are trained and equipped by the unit fire control organization. The landowners and these crews, with the assistance of the trained men and equipment of the unit control organization, can adequately control forest fires in South Carolina.

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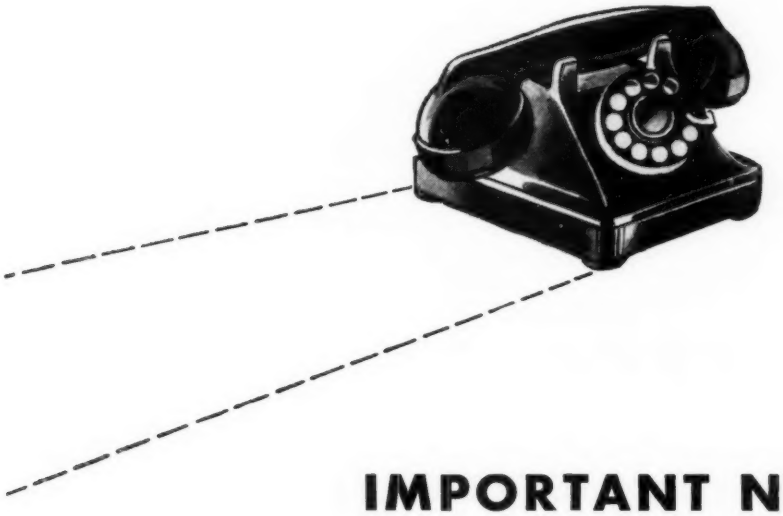


IMPORTANT NEW USES FOR BARK

Douglas Fir tree bark seems a long way from a telephone—but telephone sets have been made from thermosetting molding compounds containing bark products.

Until recently, the wood of the tree has been used, but not the bark—except for fuel. Now the development department of the Weyerhaeuser Timber Company has found important new uses for the bark.

Bark is definitely established as a good base for a plastic such as is used in making telephones. It is an ingredient for an economical new type of plywood glue—and applicable as a mixing agent in the compounding of insecticides.

Engineering and research by the Weyerhaeuser Timber Company makes these new developments possible. Thus through more complete utilization of the forest yield, research scores a significant advance for the lumber industry.

A new bark utilization factory is now being constructed and will be in operation shortly.

WEYERHAEUSER

WEYERHAEUSER TIMBER IS A CROP FOREST PRODUCTS

Committee on Elections Nominates AFA Officers

The election ballot which will be mailed all members of The American Forestry Association in December will contain the following slate of officers for 1947 as nominated by the Committee on Elections:

For President: W. S. Rosecrans of California, chairman, California State Board of Forestry.

Directors for three years: Karl T. Frederick, New York, chairman of the board, New York State Conservation Council; Don P. Johnston, North Carolina, vice president, North Carolina Forestry Association. Director for two years: Lloyd E. Partain, Pennsylvania, manager, Commercial Research Division, Curtis Publishing Company. Director for one year: Warren T. White, Virginia, director of public relations, Seaboard Air Line Railroad Company.

For Treasurer: I. J. Roberts, District of Columbia, assistant vice president, Riggs National Bank.

For Honorary Vice Presidents for one year: Dr. Isaiah Bowman, Maryland, president, Johns Hopkins University; C. Arthur Bruce, Tennessee, president, National Lumber Manufacturers Association; Thomas P. Cooper, Kentucky, president, Association of Land-Grant Colleges; Chester C. Davis, Missouri, president, Friends of the Land; Dr. Ira N. Gabrielson, District of Columbia, president, Wildlife Management Institute; P. H. Glatfelter, Pennsylvania, chairman, Forest Industries Council; Amory Houghton, New York, president, National Council Boy Scouts of America; C. P. Kelley, Georgia, president, Forest Farmers Association Cooperative; Dr. E. J. Kraus, Illinois, member, Advisory Council, National Arboretum; Aldo Leopold, Wisconsin, vice president, The Wilderness Society; Duncan McDuffie, California, president, Save-the-Redwoods League; George W. Merck, New Jersey, president, Merck Chemical Company; Frank E. Mullen, New York, vice president and general manager, National Broadcasting Company, Inc.; John W. Nelson, Jr., Maryland, chairman, Maryland Commission of State Forests and Parks; Harold C. Ostertag, New York, chairman, New York Joint Legislative Committee on Interstate Co-Operation; Mrs. Marvin Pierce, New York, chairman, Conservation Committee, The Garden Club of America; Dr. Paul B. Sears, Ohio, president, Ohio Forestry Association; Judge Clifford H. Stone, Colorado, director, Colorado Water Conservation Board; Mrs. Bertram P. Thomas, Washington, western representative, chairman, Conservation of Natural Resources Committee, General Federation of Women's Clubs; Corydon Wagner, Washington, president, American Forest Products Industries, Inc.; Tom Wallace, Kentucky, editor, *The Louisville Times*, president, Izaak Walton League of America.

Members of the Committee on Elections for 1947, are: Dr. Charles G. Woodbury, chairman; R. E. McArdle and J. C. Nellis.

Travels of a Forester in Japan

(*From page* 582)

ruined, however, by a three-foot snowfall which grounded all aircraft. It was necessary to take the 46-hour train and ferry trip.

In the morning I caught the Tokyo Special. Only in China had I seen a train carry such a human cargo. A Jap buys a ticket to enter the station—whether he gets on a train or not is his worry. Some of the people we saw had waited for two or three days. They pounded upon the windows and begged to be allowed to climb in, for the doors were often kept locked. Everyone had a pack of precious vegetables he had "scrounged" from the relatively abundant Hokkaido countryside to take to hungry Honshu. Women of all ages and sizes had heavy packs, often on top of which were securely strapped doll-like babies. I stopped in a station and offered to help a wizened old woman, who was struggling to lift a pack twice her weight. Jap bureau officials accompanying me thought I wanted the pack. They were surprised that an officer would stop to help a woman.

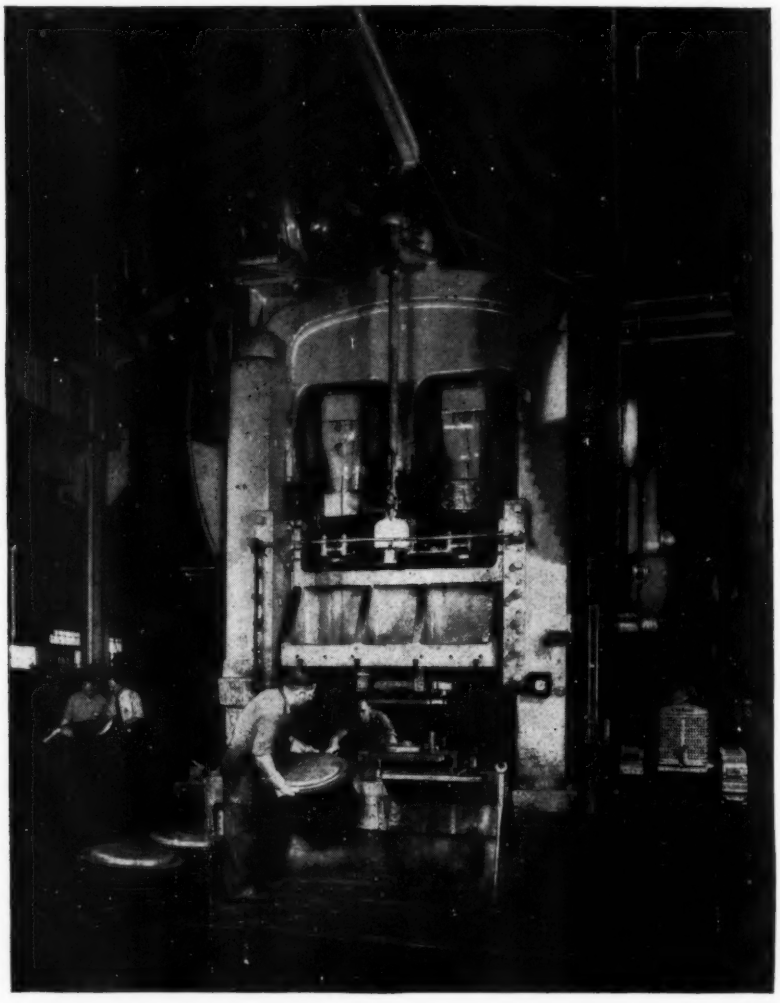
At Hakodate a half-mile-long line of people stood waiting to board the steamer. It was about 10 p.m. and bitter cold—probably 10 degrees above zero. To add to the misery of these people, none of whom seemed to be warmly clothed, a strong wind was blowing small, stinging bits of snow. I went aboard and pre-empted the captain's snug cabin for myself and party.

After the holds were filled, these miserable people poured onto the deck. Men, women and children were standing, so crowded that no one could possibly move. The only shelter was that afforded by the pressing bodies. I wondered how many of them would survive the eight hours needed to cross the straits that cold, stormy night. But as the boat docked next morning at Aomori, the deck looked just as crowded as it did the night before. Apparently most of them had made it.

Although many of the characteristics of the Japanese we do not like or understand, we grow to admire his ruggedness and his industriousness in an unwhining struggle for existence, in spite of poverty and difficult surroundings. We have to give him credit for his stewardship in building on his tiny mountainous islands a rock garden of exquisite beauty and high productiveness. As foresters, the Japs have far surpassed us. For example, they have planted five times as many trees as we have in the past 20 years. Along the railroads they have snowsheds of trees, and every farmstead, even a hovel, in windy areas, has its shelterbelt of trees. Many of their state forests have been logged selectively three times. In utilization they waste only the whine of the saw.

When I left Tokyo again it was December. This time I was sent to Suwa in Nagano Province to investigate a petition which had been presented by the head man of a local *mura*, or village. Despite the fact that the *mura* was high in the mountains and there were bound to be snow problems, I decided to go by jeep rather than by train. The distance was only 150 miles and the map showed two good roads from Tokyo to Kofu and thence one to Suwa Lake.

Another officer, an interpreter, and I started out on a crisp but not too cold morning. We were dressed warmly with thick overcoats, for the jeep had no protection from the cold and wind. Near Hachioji, after a lunch of K rations, we had to decide whether to take the short or the long



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road across the mountain range. The map indicated the longer road was slightly better, but the short route paralleled a railroad and we figured that of the two, this one was more likely to be kept open.

Why all this concern about roads? Well, we had learned that what the Japs call a highway we might call a poor country road. Our jeep would take us over almost any kind of road you could keep three wheels on, but it would stop in deep snow.

We decided to take the short road. Soon afterwards, however, we were not so sure of our choice, for we ran into ice. Then, halfway up the mountainside, we ran into snow. At first it was only four to six inches deep, but after climbing for five or ten miles it began to get deeper. The snow was well packed, however, and there was a reassuring pair of tire tracks ahead, made, we later learned, by a charcoal maker who had gone down the mountain that morning. Near the top of the climb at a charcoal pit, the tracks stopped, and from there on up the road was trackless and covered with 12 to 18 inches of snow.

One of us walked ahead to see if the jeep could pass the narrow places without tumbling over the side into the valley below. Whoever was driving—and we took turns because of the nervous strain—realized that he had to jump the moment the jeep started to slip. Finally, inching our way up and around a curve, we gave a joyous yell. Ahead was a tunnel and we knew that we were up to the height of land.

Our feeling of relief on entering the tunnel was of short duration, however. Large pointed ice stalactites hung from the roof, and our fear was that the vibration of the jeep might cause one or more to fall. In this event, the cloth top of the vehicle would offer scant protection. To intensify our concern as we inched along was the tunnel's darkness. There was absolutely no indication of daylight ahead. Then, with a suddenness that jarred us, we discovered why. A cave-in completely blocked our passage. With no alternative, we backed slowly out of the tunnel and, perspiring freely despite the bitter cold, turned back down the slippery road we had thought would be a short cut. It was a harrowing experience.

We finally took the long road around, and it was four o'clock before we passed Mt. Fugi, snow-covered and bathed in the long rays of the evening sun. We started to climb almost immediately after this, in deep snow, hoping fervently that we would not meet a Jap truck. For one thing, we didn't like the way they careened around as though they were without brakes. And then they were always jam-packed, with people clinging to the top and sides.

Luckily we had the road to ourselves and were able to make the pass just before dark. The trip down and out across a high mountain plateau was easy going, relatively speaking.

We found a small military government unit company in Kofu, where we obtained gasoline and a late supper of the best scrambled powdered eggs in the world. We were advised to spend the night in Kofu, but my interpreter put in a strong plea for going ahead. The head man of the village, he argued, had arranged a surprise party for us at Suwa. So we put all thoughts of a good night's sleep aside and jounced on past the Seven Peaks of Nagano, mountains which in the past were thought to be even higher than Mt. Fugi. Here the moon came out to light our way.

If tiny houses of farmers and woods workers were not everywhere—usually in clumps—along the roadside, the fields and mountain by moonlight would have looked just like New England. Too, in the moonlight, the dark Japanese pine appeared much like New England white pine. Rice paddy fields in the valley, blanketed with snow, resembled small wheat fields and their dikes the low snow-covered rock fences of New England. With Christmas only a few days off, we suffered the pangs of homesickness as we moved along. "At least," we agreed, "we'll have a white Christmas."

We hadn't seen a light in a dwelling since leaving Kofu. All Japan seemed to be asleep. At Suwa, however, the hotel was gaily lighted—and, sure enough, the head man and his entire assembly were awaiting us.

Hotel maids helped us off with our boots and took us to our rooms—large, beautiful rooms with sliding doors and highly polished veneer walls. The only heat was a few glowing charcoals in a sunken brazier covered with heavy quilts. To keep warm you sat on the floor with as much of your body covered by the quilts as possible.

I wanted a hot bath before supper so the maid brought me two robes, an inner one of silk and an outer one of padded wool. She insisted upon helping me change and then leading me through the cold corridors to a hot spring. Here, in the ante-room of the pool, stood another maid with a wicker basket for my robes. With reluctance I parted with the covering and made a dash for the water. There were several pools, each with a different temperature. The one where the head man was looked good, but fortunately the temperature was tested and only one foot was boiled. Japs love hot water and can stand mighty high temperatures. Bathing is their favorite sport because they like to be clean and also it is the only way they can thaw out during the cold winter. Only the coolest pool was suitable for me.

I learned also that when traveling in Japan one should take plenty of American soap. The Jap soap is a combination of volcanic ash and lime. An enthusiastic and giggling female bath attendant will wash your back, but the Jap soap will quickly remove the skin.

After the bath came the banquet of 14 courses, three of which were carp. This bony and tasteless fish is considered delectable by the Japanese. The carp is grown in the swampy rice paddies in which decomposing night soil is used for fertilizer. With the exception of the carp and whale-blubber, which tastes like an oiled rag, the meal was excellent. Shrimp and lobster tails were particularly good, especially when washed down with hot saki, a rice wine which tastes "yeasty" when cold but delicious when hot.

Two days were spent working in the area. During this time more snow had fallen, so I took the jeep to the railroad station and ordered it put in a flat car for Tokyo. While about 20 Jap laborers and three foremen were loading my car, I noticed piles of vegetables and lumber awaiting shipment. I told the station master to fill up my freight car with these commodities so urgently needed by the starving and freezing Tokyoites, but he said something to the effect that Tokyo could wait. This brought forth a lot of jabbering among the laborers. My interpreter said the workmen were commenting upon the fact that a high American official is concerned about the welfare of the people while the little Jap bureaucrats ignore their troubles. This observation is not to eulogize the author but to indicate that occupation soldiers were really trying to carry out the wishes of General MacArthur in creating conditions conducive to democracy, while apathetic Japanese officials with oriental complacency said "*Soo des*"—meaning "Oh, well, nothing can be done."

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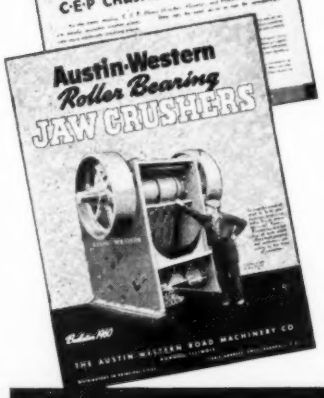

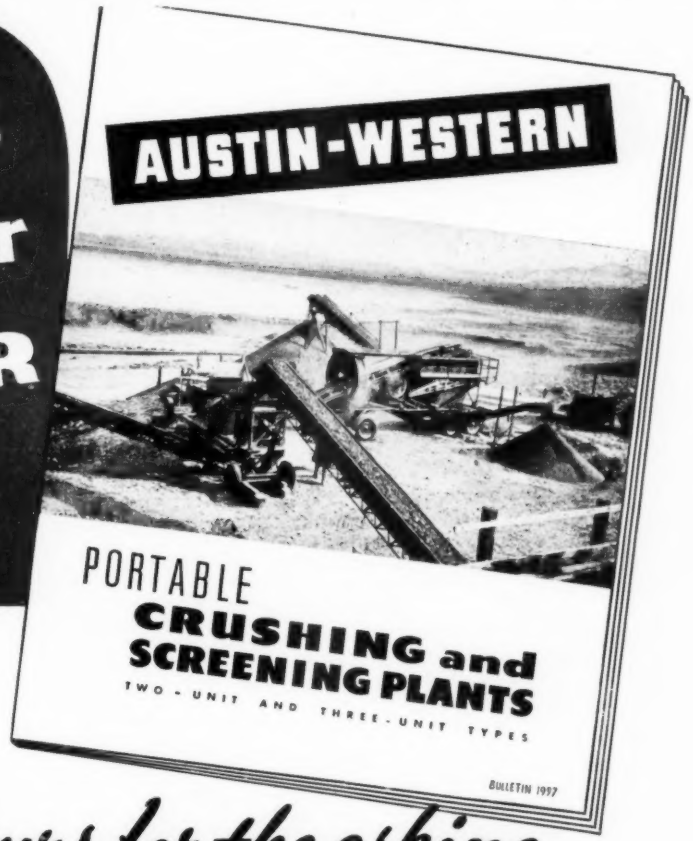

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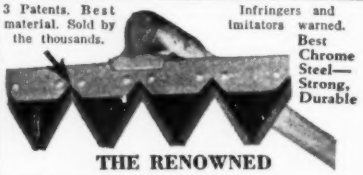

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De-Nazification of German Foresters

(*From page* 583)

General order No. 84 read in part: "All those officials who are honest in their relations to the Fuhrer should clear the way for their own children to enter the Hitlerjugend. . . . All officers should be notified and instructed in this direction."

Once a member of the party, one remained a member—or else. A general order issued on February 27, 1936, left no doubts as to the fate of a person who abandoned the party. "If he has left for the reason that he does not approve the program of the party he cannot continue in office. But even if that supposition does not hold good, it is obvious that such an officer does not have any idea of the close connection of all men holding official positions with the National-socialistic State, or else such a man is unwilling to make the necessary sacrifice. In that case the man must anticipate that he will be excluded more or less from any advancement."

In addition to the requirement of membership in the party, foresters were expected to belong to associations led by the party and to support such associations financially, as is indicated in an order of April 3, 1936. "I have recommended to all foresters that they should join such organizations. Unfortunately there is no possibility of reducing the annual dues of members since the administration has no money reserves for this end."

Foresters likewise were required to be active in party service in their private as well as their official lives. This was made clear in an order of September 17, 1936. "A forester is not only responsible for his behavior in the forest service but also outside the service. In the case of political leaders the behavior outside the service must not be separated, however, from the behavior inside the state service."

These are some of the reasons why employment policies in the American zone became more stringent after the occupation settled down. All German officials who were party members prior to May 1, 1937, were considered mandatory removals re-employable only as common laborers. Supervisory positions were closed to them.

Other occupying nations have been more lenient in their approval of former Nazis. Approximately one year after the British Military Government assumed responsibility for the occupation of the Rhine Provinz, initially under American control, it was reported that the Nazi foresters temporarily approved by the Americans were still employed in responsible positions.

The British and the French have probably looked upon the employment of nominal party members as a justifiable temporary measure. So also have the Russians, according to reports from their zone. The more strict American policy has made it difficult to staff the German Forest Service in the American zone with competent personnel. It will be years before sufficient eligible men from forestry schools will be available to fill required administrative and technical positions.

The task of those who are charged with reorganizing the German Forest Service would be simplified, if the de-Nazification policy were somewhat relaxed. Distinction could be made between ardent former Nazis and those whose connection with the party was nominal, perhaps forced upon them. Persons of the latter sort could be investigated thoroughly but impartially. After a thorough appraisal of character, ability, past performance and inclinations, it might be practical to offer temporary employment in professional work to men who are capable and intrinsically harmless. If that could be done it would brighten the future of German forestry.

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Where Audubon Hunted

(*From page* 587)

objects of my greatest delight. I shot, I drew, I looked on nature only; my days were happy beyond human conception. I seldom passed a day without drawing a bird or noting something respecting its habits."

The stay of the Audubons in Louisville was a happy one and they found many interesting friends. But it was plain that Audubon was not destined for commercial success. Soon after the birth of Audubon's first son, Victor, the ownership of the store was taken over by Rozier.

During many ups and downs of fortune, the Audubons settled near New Orleans where Lucy taught school to add to their meager income.

Then the father of two boys, Audubon went to New York and Philadelphia to attempt the promotion or sale of his now extensive collection of bird paintings. His efforts, however, were futile and at last, through the urging of his courageous wife, he sailed in the spring of 1826 for Europe. As everyone knows, his genius was instantly recognized abroad and his monumental work, *The Birds of America*, published.

The Mill Grove property was purchased by and is still in the possession of the Wetherill family, whose fortune was derived from the manufacture of white lead and paint.

The present owner of the estate is Herbert Wetherill, while another member of the family owns picturesque Fatlands, where Audubon's romance began. Wild ducks still mingle with Mr. Wetherill's domestic waterfowls, but many of the game birds that haunted the woods in Audubon's day are no longer found in the vicinity. The passenger pigeon that once alighted in almost unbelievable numbers is no more and the wild turkey and ruffed grouse, once so plentiful, are no longer seen. Though the notes of the warblers and other songbirds are still to be heard, the native game birds have been largely supplanted by the exotic ringneck pheasant in the country where Audubon began his immortal work.

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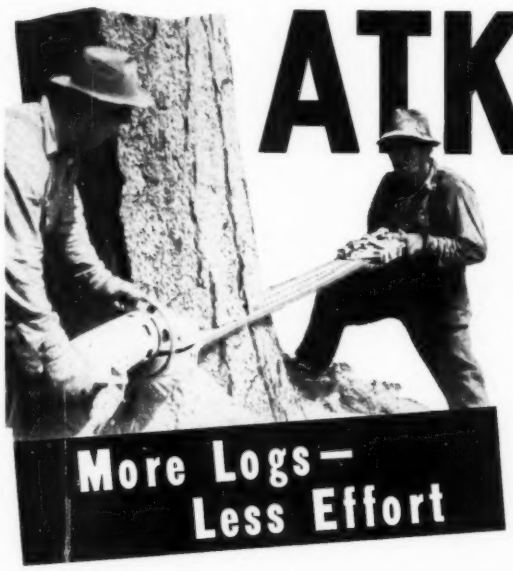

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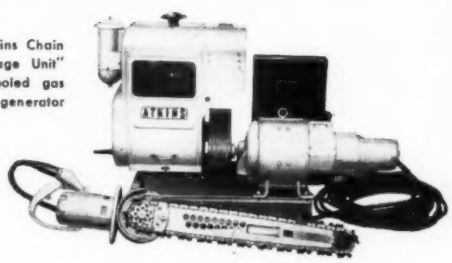

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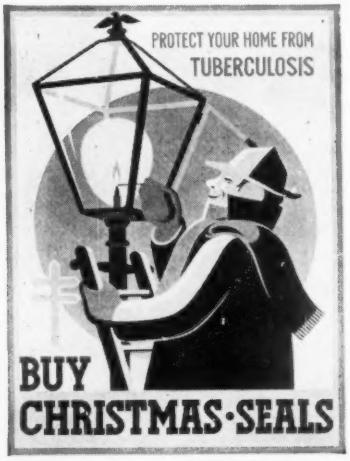

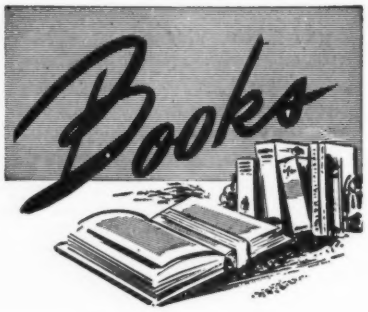

A FEW BRASS TACKS, by Louis Bromfield. Published by Harper and Brothers, New York. 303 pages. Price $2.75.

Here is an analysis of some of the tragic political, economic and social problems of today. Mr. Bromfield points out that a nation's real wealth is measured by its natural resources. His admonition is to conserve our resources, to follow a policy which will lead to high agricultural yield at a lowered production cost and to establish trade upon a basis whereby we receive as much real wealth as we export. But the book goes well beyond the realm of resource conservation. It sets the reader thinking on world problems.

ANIMAL TALES, compiled and annotated by Ivan T. Sanderson. Published by Alfred A. Knopf, Inc., New York City. 510 pages, illus. Price $5.00.

Mr. Sanderson, an outstanding American author-naturalist, has brought together under one cover some of the greatest writings of other distinguished scientists in this field—from ancient times to the present.

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After extensive research, Mr. Hottes, well known author of numerous books on plants and gardens, has assembled the material which has made this book possible. The result is probably the most complete book of its kind ever published.

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All in all, this is a very practical and entertaining book for Christmas gift-giving. It combines a wealth of material ranging from the history of Christmas down to such simple interests as Christmas cards and toasts.

TREES IN BRITAIN, by J. F. Brimble. Published by the Macmillan Company, New York City. 393 pages. illus. Price $4.50.

This is a beautifully printed, generously illustrated volume describing both conifers and broad-leaved trees—native and exotic, growing in England. It is popularly written, yet scientific enough to make it a valuable contribution to botanical libraries.

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Little Waters

(*From page* 577)

records showed that this runoff is due to a form of sub-surface storm flow. The stream runoff patterns were studied with relation to changes in the elevation of ground water table in observation wells. In this manner it was shown that the rainfall first entered the soil and then moved laterally through the porous upper soil layers to the stream channels in time to contribute to the storm runoff. Such natural processes can best be demonstrated on a small experimental watershed basis.

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Olympic

(*From page* 571)

leys, and then hastened back to camp with the news.

The expedition's gear was stripped to essentials. They divided what remained into five packs of 75 pounds each and on May 1 retraced, with high spirits, the route Christie and Barnes had taken several days earlier. Instead of ascending the tall peak, they skirted it and worked their way up the side of a long narrow ridge.

"At length we stood upon the summit." wrote Barnes. "At our feet far below was a broad and beautiful valley—but not the Quinault. What was it?" Several of the men climbed a nearby knoll for a better view.

"On our arrival there we saw at once what we had done. At our feet lay the beautiful Press Valley, broader and larger than where we left it at the mouth of the Goldie. . . . In shape the valley is a crescent. We had left it at one horn, traveled over 20 miles of the roughest country and through the most rugged canyon in the mountains . . . only to find ourselves at the other horn of this crescent-shaped valley. We might have made the journey in a couple of days of easy traveling. . . ."

That night they camped on the valley floor and made a meal of flour soup. "To make flour soup for five men, one pound and a half of flour

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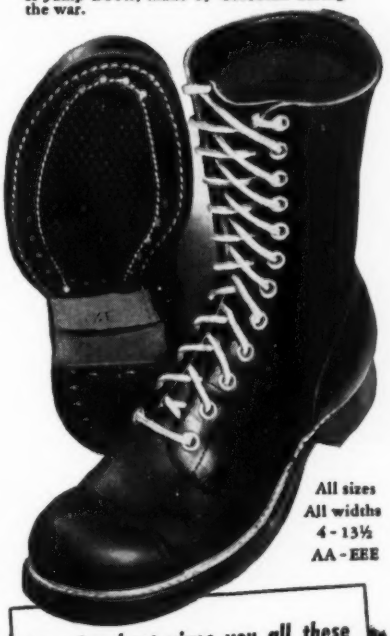

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is added to three gallons of boiling water and well stirred." They had sighted no game for days.

During the next few days the undernourished explorers worked their way southwestward to the pass which divides the Elwha from the Quinault. At one point they scaled a rocky cliff, climbing hand over hand, groping for each hand and foot hold. A half mile beyond the cliff they came upon a beautiful little lake, frozen and snow-covered. Its outlet, to their dismay, was *northward*. They named it Lake Mary. From its south rim they sighted a sister lake which they named Lake Margaret.

An hour later the expedition came upon " . . . a great rock shaped like a vast cathedral, with spires and entrances. Through a hole in the snow at this point we caught our first sight of water running south." A few minutes after that the party had more good fortune. The dogs located a black bear, which Christie promptly shot. In 15 minutes they were frying bear meat over a campfire.

Bolstered with the supply of fresh meat, the men decided to camp for several days and explore the headwaters of the Quinault. Barnes climbed Mt. Seattle and gazed in admiration at the country which surrounded him. Tall, jagged peaks, eternally snow-capped, formed a semi-circle to the west and north. The three snowy peaks of Mt. Olympus stood in timeless grandeur against a background of blue sky. He mapped the area carefully, naming one peak Mt. Meany for the *Press*' young city editor, then returned to camp just in time to join in another successful bear hunt.

"We don't often change our bill of fare," he wrote, "but when we do it is radical. Flour last week, meat this. We have old bruin in every style, roast, boiled, and fried. His sides thick with fat we rolled up and boiled and ate cold. One of his hams roasted would tempt the most pampered appetite. The first bear was consumed in three days and a pretty good sized bear he was."

The expedition broke camp on May 9 and moved rapidly southwestward over frozen ground on an easy downgrade. The next day they followed an elk trail along the mountainside through rougher country.

"Presently we found that the trail was blazed. . . . The blazes were very old, like those upon the Elwha," Barnes chronicled. "Fully half of the blazed trees are dead and broken off, say from 10 to 15 feet from the

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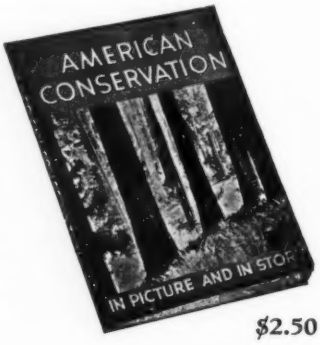

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ground. These old yellow stumps . . . make a long line through the woods . . . marking the trail of the old Indian."

They continued to follow the river for several more days, making good progress over rough country; then one afternoon the five men sent a great cheer echoing through the timber. Directly ahead of them, sparkling in the summer sunshine, lay Lake Quinault and civilization! The five explorers, first white men ever to come out of these mountains, found a small but rapt audience among the dozen white settlers on the lake.

The Seattle *Press* Exploration Expedition had been in the wilds for approximately six months. In that time they blazed and carved a crude trail for nearly 50 miles across the heart of this unknown wilderness. They probably covered, with their hunting, scouting and side trips, more than 200 miles. They named nearly 50 peaks, rivers, lakes and other landmarks, provided a rough topographic map of the country, photographed it, reported on its plant life, wildlife and minerals. They risked their lives many times and suffered extreme hardships. They opened the country, which became in turn and in parts a U. S. forest reserve, national forest, national monument, and finally America's fourth largest national park, now visited annually by more than 100 thousand people.

Whatever the expedition lacked in judgment regarding the best time to explore the mountains, or in the detail and scientific accuracy of its reports, it made up in a spirit of interest and sincerity. These men were cut from the same cloth as those hardy pioneers who opened the Oregon Territory, of which the Olympic country was a remote and unknown part.

A. R. Thompson Dies

A. Robert Thompson, of the National Park Service, and a well known forester and authority on diseases of shade trees, died in Chicago on November 16.

Mr. Thompson was president of the midwest section of the National Shade Tree Conference, and is known to the readers of AMERICAN FORESTS as the author of a popular series of monthly articles, "Your Shade Trees," published in 1939. Mr. Thompson was a graduate of the New York State College of Forestry, and had been with the National Park Service since 1933.

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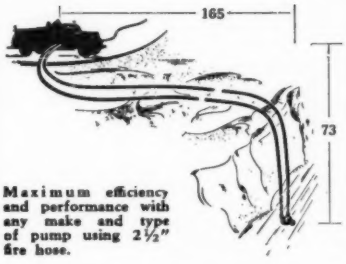

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Mystery of the Mistletoe

(*From page* 573)

mistletoe but that that weak and strengthless shrub could doubtless harm nothing.

Sometime later Loki found the gods again at their sport with Balder. Thereupon he sought the stoutest possible shoot of mistletoe and fashioned it into a small but formidable spear. Returning to the merriment, he encouraged Hoder, the blind god of winter, to participate in the fun. The unsuspecting Hoder, guided by Loki, threw the missile of mistletoe which killed the goodly Balder. Great was the sorrow and consternation of all the gods by Loki's foul deed. Poor Frigga was sorely distraught; her tears were not stilled until her son was restored to life—not without some difficulty—by the wizardry of the Norse deities.

The gods then exacted a vow from the mistletoe that it would never again do an uncharitable deed but would be forever consecrated to acts of happiness and usefulness. Frigga was given the authority of making the mistletoe live up to its pledge. It is from this myth that some students of folklore believe was originated our custom of hanging it in our rooms at Christmas. Health, happiness and freedom from harm is yours—guaranteed by Frigga, the Norse goddess of love and beauty. The kissing is believed to refer to the kisses Frigga bestowed upon the Norse deities who assisted in the resuscitation of Balder.

Our modern custom of kissing under the mistletoe during the yuletide season apparently originated in the halls of the old English servants' quarters at Christmas. As would be expected, its popularity soon spread to the parlors and drawing rooms of the gentry. Originally, after each kiss the young man had to pick off a berry. When all berries were so taken, the mistletoe was deprived of its magical properties. The origin of this practice may have some connection with the grief of Frigga, her tears being likened to the berries of the mistletoe. But alas, the maid who was not kissed under the mistletoe would, most-of-a-certainty, not be married during the ensuing year.

And so throughout our story is woven, somewhat obscurely perhaps, the enigma of the mistletoe. In the maze of legends and folklore about this plant there surely must exist a clue which might help to reveal the proper interpretation of these old customs and uses of mistletoe.

The riddle of Frigga, Loki and Balder—it appears improbable that primitive Norsemen could create such a myth without some basis of fact. Or, in the eyes of the Norse, could Balder have been Christ and the foul deed by Loki been His crucifixion?

The strange rites and reverence of the Druids for the mistletoe excites the imagination. Could this seemingly sacred shrub actually have been the mistletoe that the English of today know? Or could it, perchance, have really been endowed with miraculous powers and, being so, was completely obliterated by selfish men? If this assumption be correct, and since the mistletoe lost all its powers when all the berries had been plucked by the kissing beneath, could it not be possible that some unusual scent emanated, influencing those below, even as the subtle perfumes of today create pleasurable feelings? And does it not appear strange, that in such isolated countries as France, Japan, Switzerland, Sweden, Africa and England the mistletoe was endowed with supernatural potency? Could not the faith of these people in these powers have been so intense that cures were actually effected; modern medical science affirms that this is not wholly without the realm of probability but an actuality in certain specific instances. Could the mistletoe of olden days actually have existed as a "tree" and through some strange evolutionary process degenerated to the parisitic shrub of today? And so, this is the mystery of the mistletoe; its solution merits consideration.

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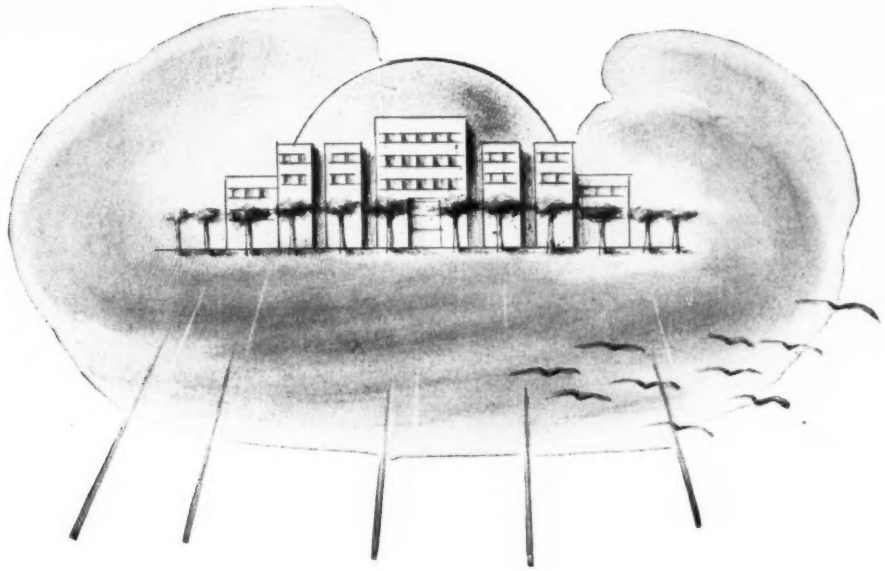

Dream Hospital...

The hospital depicted here exists only in the hearts of men and women who are losing the grim battle with cancer. And in the imagination of other men and women who want desperately to provide a haven for these victims in need of hope and care to sustain them in the few months or years still remaining to them.

Actually, there is not a single such hospital anywhere devoted exclusively to these unfortunates who *may* be beyond the help of medical sciences, but who are still certainly in urgent need of hospital care. And only a limited, woefully insufficient number of beds available to them in other hospitals.

During the long years of the war we gave up our plans for the building of this dream hospital...**Hope Institute.**

But now we are more than ever determined to see it rise in stone and steel. A model hospital, the first of its kind ... cheerful and comfortable in every way ... with more the atmosphere of an apartment hotel than of a cold institution. Where the patients, depending upon their condition, can enjoy the warm hospitality of lounge and dining room, or retire to the merciful seclusion of a private room.

What do we need to build this hospital now? **You.** Every dollar or penny you can scrape together for it. Whether or not you know this tragedy from bitter personal experience ... the tragedy of whole families, endlessly frustrated in their determination to care for a doomed member ... give as generously as you can. Please fill out the coupon below and mail with your contribution. It will make this hospital more than a dream.

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Scots Develop Synthetic Timber

The development of a synthetic timber, "heatherwood," capable of grained and birds-eye effects of great beauty and hardness has been announced in Scotland. It opens up new possibilities for general use as a hardwood and especially for flooring in competition with the natural hardwoods from Empire and American sources. Basis of the new product is heather, which grows in abundance in Scotland.

Commercial production of heatherwood is planned; the principal immediate use will be as a hardwood floor veneer.

Save Your Planetrees

(*From page* 585)

Also, tree-wound paints may become contaminated through careless handling, and again the fungus is carried to healthy trees.

Just as in humans any break in the skin may be the port of entry for infection-producing bacteria, so in the London planetree the slightest scratch in the waxy cuticle of the bark may be the gateway through which the fungus enters. You may have been the cause for spread of canker stain. You may have used your ax to chop fuel wood, for instance, from an infected tree and then struck it into a healthy one. And with that blow you introduced the disease. Or, your small son may have tried out his jackknife in the diseased area of some tree and then carried the fungus to a healthy one by sticking his knife into that.

Perhaps he only threw a stone at the tree. But the wound it made in trunk or branch was the possible starting point for infection. Maybe your moving van, truck, or bus scraped the lower branches. Your lawn mower may have barked one of the large buttress roots of the tree. Marks from climbers' boots, saw scratches, rope burns, all have been found to be points of infection. The most guilty of all seems to be the contaminated pruning saw.

Sanitation, warn forest pathologists, is the first essential in the control of canker stain. Pruning tools, such as saws, chisels, knives, and hooks, may be disinfected by dipping or thoroughly swabbing them in denatured alcohol. And they advise that you can add 0.2 percent of phenylmercury nitrate to asphalt varnish to make tree-wound paint antiseptic. Phenylmercury nitrate, the scientists warn, is highly poisonous and must be handled with caution.

The pathologists also found that in the latitude of New York City, trees may be safely pruned from about the first of December until the middle of February without danger of infection. Badly diseased trees should be removed, they advise. Where the trunk is not infected, diseased parts of the tree may be pruned.

These are the means, simple and practical, that federal scientists now can give you for saving your planetrees from their deadly enemy, canker stain.

If you're in doubt whether your planetree is diseased, the pathologists invite you to send fresh samples of the discolored wood to their laboratory. Address the samples to the Division of Forest Pathology, Plant Industry Station, Beltsville, Maryland. The scientists will examine your samples and let you know what they find.

AUTHORS

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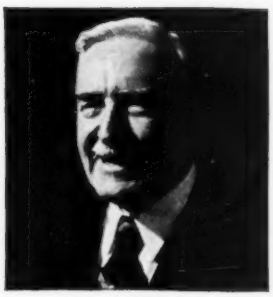
UNCLE

AUNT

GRANDMA



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